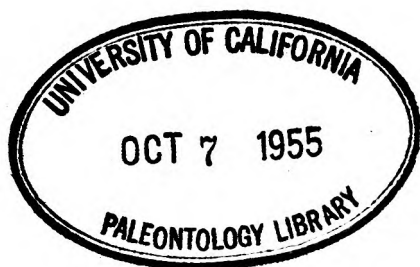




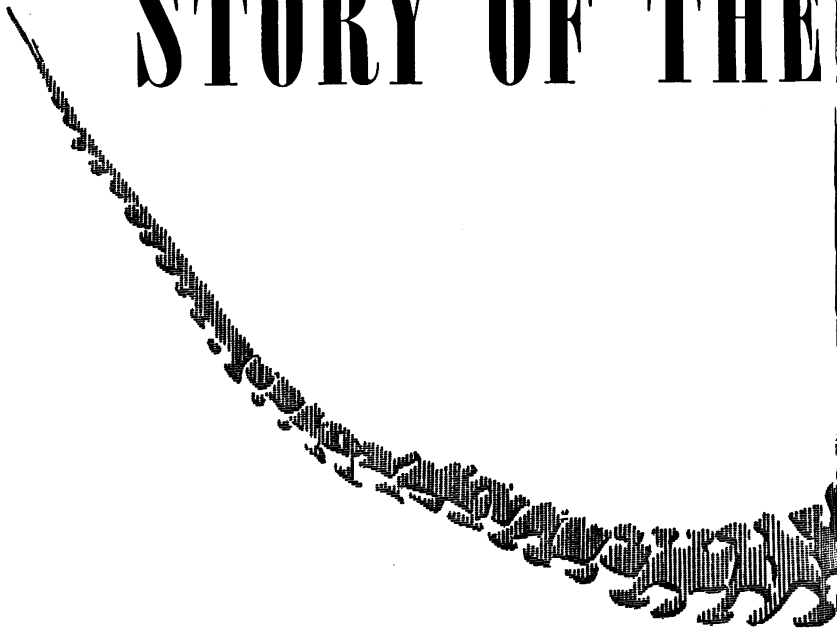
THE STORY OF THE FOSSILS

GEORGE McCREADY PRICE

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THE STORY OF THE



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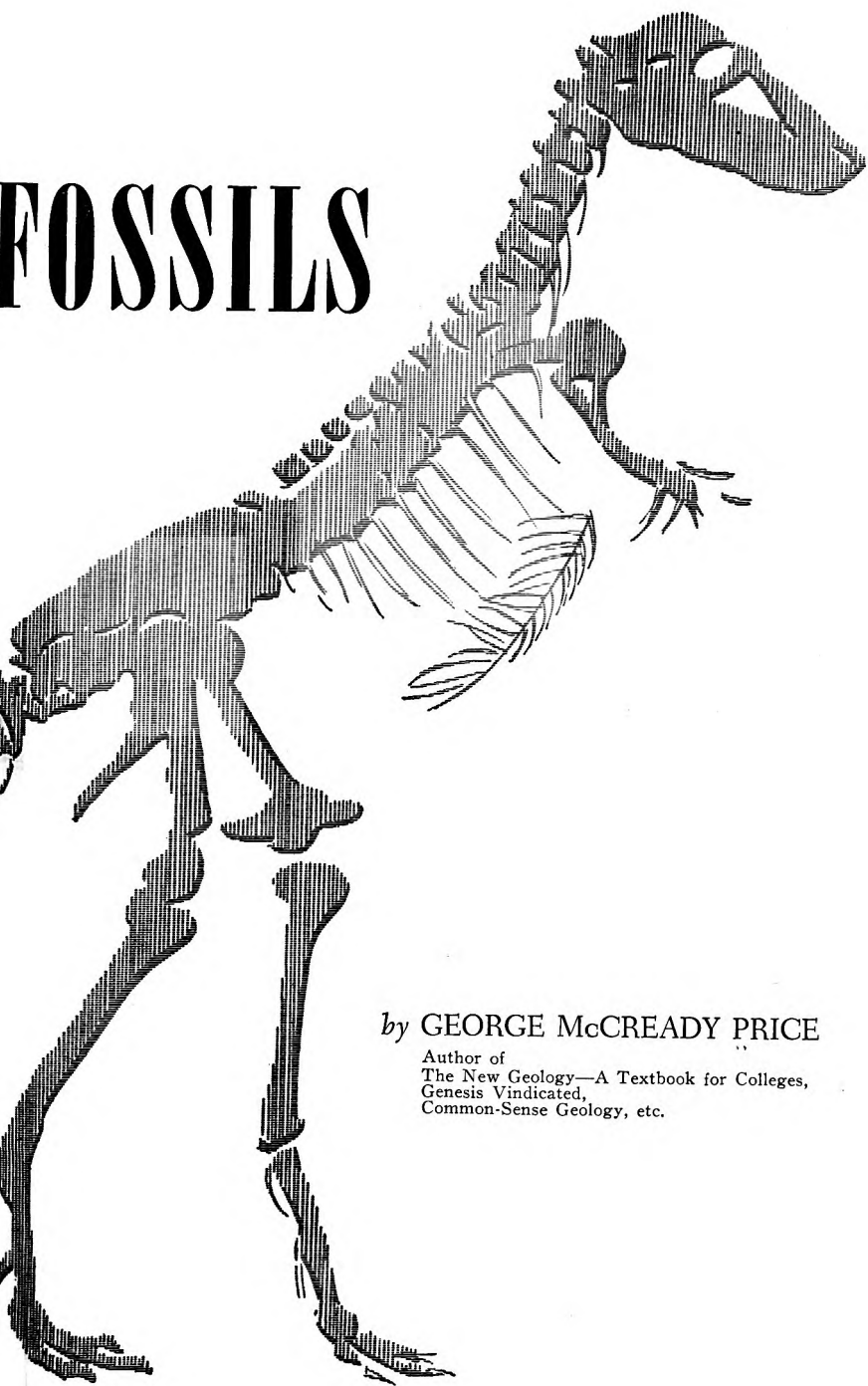
MOUNTAIN VIEW, CALIFORNIA

Brookfield, Illinois

Portland, Oregon

Omaha, Nebraska

FOSSILS



by GEORGE MCCREADY PRICE

Author of
The New Geology—A Textbook for Colleges,
Genesis Vindicated,
Common-Sense Geology, etc.

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GIFT

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LESTER QUADE, ARTIST

The discovery of mammoths buried in the tundra of Alaska, Canada, and Siberia, and well preserved in the earth's refrigerator, is a problem that geologists have not been able to explain or harmonize with evolutionary views.

Fossils on Mountaintops

MANY people are not aware that all the great mountain ranges of the world contain sea shells, corals, vertebrate fishes, and other relics of ocean life. This is true of the Rockies and the Andes, the Himalayas and the Alps, and essentially all the great mountain regions of the world. These marine fossils may be in limestones, shales, or even in some of the finer sandstones, the coarser sandstones, and the conglomerates, being so porous that the percolating waters have long since dissolved and removed all but the largest fossils, such as the bones of whales or those of the larger land animals. But the brachiopods or oysters or other forms of ocean life are often well preserved and tell us plainly that the beds in which they are contained must have been deposited by the waters of the ocean.

New York is about the only one of the large cities which is not built on fossiliferous strata. The rock of Manhattan is crystalline and nonfossiliferous. Chicago, Philadelphia, Los Angeles, and most of the other cities of North America have marine and other fossils in their underlying rocks. I used to have in my collection a piece of honeycomb coral from the rock under St. Louis, Missouri, exactly like the beautiful structures fished up by the "Challenger" Expedition from the Pacific Ocean, and until that time classed as extinct for many millions of years. London and Paris, Berlin and Hong Kong, and most of the great cities of the entire

world stand on foundations containing fossils of one kind or another, in many instances relics of creatures which live only in the deeper parts of the ocean.

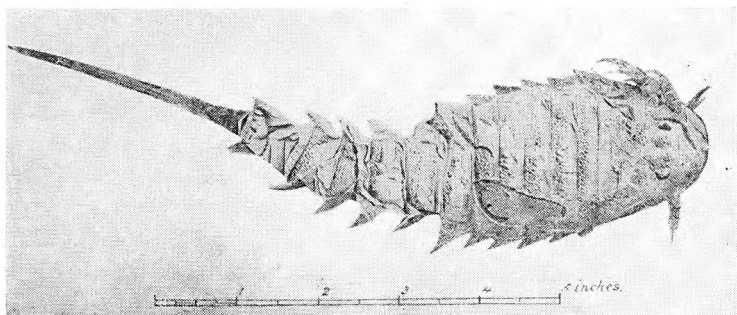
Tennyson, who was haunted by evolutionary speculations decades before Darwin wrote his famous book, expressed the facts well:

O earth, what changes hast thou seen!
There, where the long street roars, hath been
The stillness of the central sea.

Of course we are not ready to decide offhand how these earth changes came about, whether in the slow, gradual manner taught by the evolutionary geologists since the days of Charles Lyell; or whether they took place suddenly, by a world disaster at the time of the Flood, as mentioned in the Bible. If we wish to employ strict scientific methods we should hold these two opposite explanations in our minds until we have all the pertinent data available, and then decide according to the preponderance of the evidence. So for the present we shall merely suspend judgment on the manner of these changes, until we have more facts. In the meantime we shall notice a few more interesting examples.

An interesting set of limestones extends (with of course some interruptions) from the Pyrenees Mountains, between France and Spain, through the Alps, through the Balkans, across Asia Minor, and across Asia to the East Indies. These limestones are composed largely of shells of *nummulites*, creatures somewhat like those forming the chalk, though somewhat larger, being sometimes nearly an inch across. These nummulitic limestones were used in building the pyramids of Egypt, and individual shells, being harder than the matrix in which they occur, are found weathering out prominently on the surface of the Sphinx, and have long been called "Pharaoh's beans" by the Arabs.

Another interesting fact about these nummulites is that, according to the standard of universally accepted classification, they are about the highest among the invertebrates, which means that in geology they are rated as very late or recent in the geological ages.



U. S. G. S.

A fossil shellfish discovered in the coal fields of Pennsylvania proves that it was buried suddenly before decay set in.

That is, all the vast ranges of mountains in which they occur must have been formed near the close of the entire geological program.

Stating the case again in still other words, all this means that these mountains have to be rated as having been uplifted at about the same time as the Himalayas and the other central mountains of Asia, which, according to the late Bailey Willis, one of the foremost of American geologists, "challenge credulity by the evidence of their extreme youth."

As similar language has to be used regarding the American Cordillera almost from Alaska to Cape Horn, we are brought face to face with one of the most remarkable facts developed by geology; namely, that the mountain making of the larger part of the globe, as judged by the fossils involved, must have been practically one event, and must have been postponed until essentially all of the rocky strata had been deposited, making the uplifting of the mountains about the last of the great geological events.

No wonder the veteran James D. Dana, who might almost be rated as the "father" of American geology, remarks that this late date for the uplifting of the mountains is "one of the most marvelous in geological history." He goes on to explain why it is so wonderful: "It has been thought incredible that the orographic

[mountain making] climax should have come so near the end of geological time." "Yet the fact is beyond question."—*Manual of Geology*, 4th ed., pp. 392, 1020.

Needless to say, evolutionary geologists do not feel inclined to publish from the housetops this fact about the mountain making of the globe as being essentially one event, and that it took place at the close of the entire geological program.

Since there are plenty of fossils in the rocks of Greece and Italy still to be seen, it is only natural that two thousand years ago, during the classical period of Greek and Roman history, they would be even more conspicuous. The famous marbles with which these peoples did their building are almost all fossiliferous. The Greeks and Romans had to have their theories about how the sea shells and other fossils got into the rocks of the mountains. Some of their theories were childish, but some postulated a slow, gradual exchange of ocean and dry land much like that taught by Lyell and his modern followers. True, they had traditions of a great deluge in the early days of mankind; but, being pagans or heathen, they were inclined to speak of many such events as taking place in an endless succession, or in cyclical rotation. Of course their ideas were highly speculative and fanciful, for they knew only a small portion of the earth's surface.

However, in our day, when mining engineers hunting for coal or oil or other minerals have examined almost every square foot of the lands of the globe, and have even superficially examined a few parts of the ocean bottom, the same old problems which confronted the Greeks and Romans are still with us. We have the option of choosing between slow, gradual changes of land and water, or a sudden, catastrophic world disaster. For more than a century the theory of slow gradual changes has had a fair chance and an open, unobstructed field. With all the universities and colleges of the entire civilized world teaching the geological theories of Charles Lyell, and with the uncounted millions of capital represented by the coal and oil interests ready to sponsor experimentation or field exploration, one might think that settled, rock-bottom truth would

have been already attained in these problems. But two important hindrances have operated to obstruct the final settlement of these questions.

In the first place, all the practical methods of searching for coal or oil, or of recovering them when found, are only matters of good common sense, and would be the same no matter which theory is adopted. Much progress had been made in practical mining before Lyell's uniformitarian theory was adopted; and the catastrophic views they then held did not seem to hinder them in the least in their practical work. I also know some mining engineers today who repudiate the theories of Lyell, and hold to the catastrophic view of the origin of the geological changes; and their views do not seem to hinder their success. In other words, the practical methods of finding coal or oil or other minerals are the same, no matter which theory is held.

The second and even more important hindrance in reaching ultimate truth in these matters is that the catastrophic view of the earth's past is so intimately tied up with religious ideas and principles that it can hardly be entertained as a possibility except by those who are prepared to believe in miracles and in the divine inspiration of the Bible. The Good Book tells us that men naturally love darkness rather than light, a principle of human behavior which can be verified in a multitude of ways all around us in everyday life. Accordingly it is much easier, much more "natural," for men to believe in the naturalistic theories of the popular geology than to believe in the miracles of the Bible, one of the greatest of which was Noah's Flood.

We began this chapter by saying that we must suspend judgment until we have essentially all the available facts in the case. These facts we shall endeavor to present in succeeding chapters.

*How Did They Come to Be
Packed With Dead Animals?*

Graveyards of the Ancient World

A CORONER is always supposed to be a man without prejudice. He must not hold any bias concerning the case he is investigating, but must always decide strictly according to the evidence. If a coroner were to proclaim himself as a complete disbeliever in the possibility of a murder or a suicide, and declare that all deaths are due to "natural causes," such as sickness or old age, he would be hooted out of his official position without delay. We want the truth, the whole truth, and nothing but the truth in such cases.

A geologist should be like a coroner. He is expected to render a just and true report on how the millions of fossils came by their death and were buried where we find them. A candid, unprejudiced inquest on the fossil deposits of the world ought to be capable of deciding whether or not they were buried by the slow, commonplace causes now operating around us, or whether they must have been due to some sudden, cataclysmic event, such as that described in chapters 6-9 of the book of Genesis. Why should a geologist stultify his scientific reputation for candor and honesty by proclaiming his bias or prejudice against the possibility of a world disaster in the long ago?

A coroner needs to know the normal action of the human body in health in order that he may be able to detect the abnormal. Similarly a geologist needs to know how animals and plants are



MONKMEYER

The Rocky Mountains of Colorado, showing Forest Canyon from Monument Ridge. These mountains are an example of the terrific upheaval that once occurred in nature.

being buried today in our modern world, in order to judge whether normal or abnormal conditions prevailed in the long ago. Those conditions were responsible for what we now find of the remains of plants and animals in the shales and limestones of the mountains, or deep in coal mines or oil wells. Only by having a good knowledge of what is going on in the modern world are we able to judge regarding the ancient rock formations. But we also need the honesty and candor of a true coroner, in order to make us acknowledge wholly abnormal conditions when we do find them. According to the old proverb, there are none so blind as those who will not see.

The fact that exceedingly few fossils—practically none at all

—are being formed in the world today is known by all who have studied the subject. Uncounted millions of bison or American buffaloes used to roam the plains of the West. They lived here for hundreds, or perhaps thousands, of years before the whites came. Where can one find a fossil skeleton of one of these animals, or even a substantial part of one? A very few sub-fossil parts occur here and there, but a genuinely fossilized bison skeleton is almost unknown. True, many Pleistocene fossils of the prehistoric bison are plentiful enough; but this is a different and much larger animal. These prehistoric bison had vanished from this continent, along with the camels, the elephants, the rhinos, and the many other kinds of those “giants of the prime,” which seem to have disappeared together at the “end” of the true geological age. These prehistoric mammals are genuinely fossilized, as is the case with the dinosaurs, which occur in about the same localities and in the same conditions of burial.

The great scarcity of modernly made fossils is emphasized by the results of dredging at the mouths of such rivers as the Mississippi, the Thames, or the Seine. In spite of the large numbers of cats and dogs and other domestic animals which find their way into these rivers, not only are no intact skeletons ever found in the deposits at their mouths, but even fragments of any such animals are exceedingly scarce. Fossils of our modern land animals are almost nonexistent.

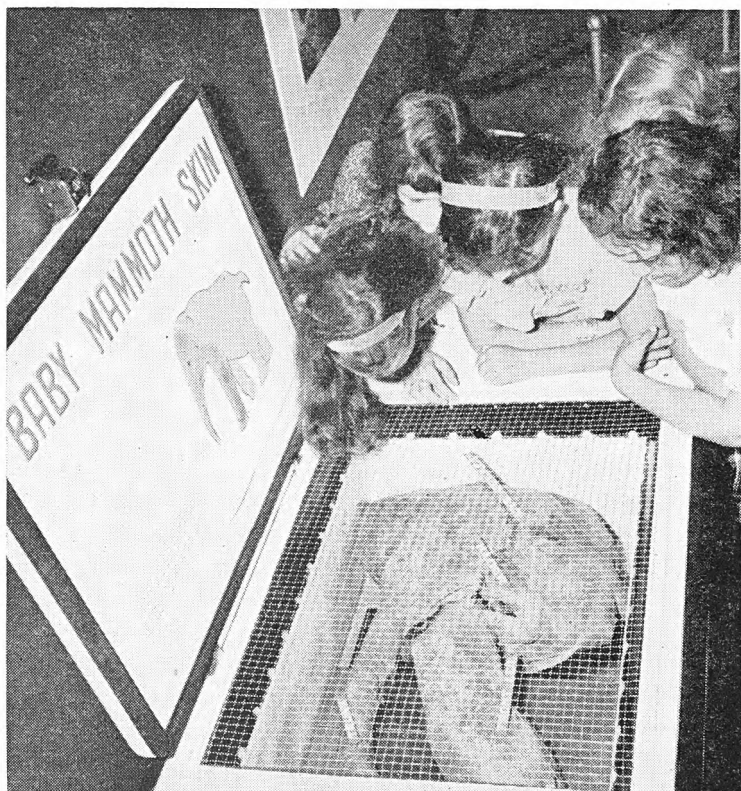
Ancient “Bone Quarries”

In vivid contrast are the “bone quarries,” not only in some of the Southern States, but in various other parts of the world, where vast quantities of animal remains are being mined on a large commercial scale for their phosphate of lime. Some of these deposits have been worked for half a century or more. Or take the bones of zeuglodon whales, so common in Alabama and other parts of the South that they were used to make walls, or were burned to get rid of them. They were true fossils, however, having weathered out and been left on the top of the ground, when the softer

matrix of soil in which they occurred had been washed away. Similar conditions are found in parts of Wyoming and in other sections of the West, where one scientist declared that he could almost have walked across a ten-acre field by stepping from bone to bone, and not allowing a foot to touch the ground. These bones in the West are those of the dinosaurs; but in other parts of the Rocky Mountain region the bones of Tertiary mammals are almost equally common.

The vast numbers of fossil elephants (mammoths) found in the extreme north of Siberia and Alaska, and in the islands of the Arctic Ocean, will doubtless occur to the mind of the reader. The fact that some specimens have been recovered with the flesh still intact, and eagerly devoured by dogs, wolves, and foxes, is known by almost every intelligent person. It is not the spectacular suddenness with which they must have perished that concerns us here; that phase of the subject will be dealt with in a subsequent chapter; here we are dealing only with their abundance, or the prodigious numbers involved. It must suffice to say that some of the islands in the Arctic, such as Bear Island and the Lyakhov Islands, are declared by competent scientists to consist largely of elephant remains interspersed with sand and ice. A regular trade in fossil elephant ivory has been carried on for a thousand years, eastward to China and westward to Europe; and this fossil ivory has a regular market quotation, like that of wheat or cotton.

The vertebrate fishes tell the same story. Shales and black limestones containing fossil fishes occur in almost all parts of the world. Many of these beds are so completely saturated with fish oil that they will burn almost like coal. Because they extend miles and miles in such localities as Colorado and Scotland and elsewhere they threaten to compete with the regular sources of coal or oil, for commercial purposes. One strip of these fish shales extends (with some interruptions) from Alsace and Baden in western Germany, through Galicia and Austria, to the Baku region on the Caspian Sea, a distance of about two thousand miles.



UNITED PRESS

Young students are looking at the face, trunk, and part of a leg of a baby mammoth discovered beneath three hundred feet of Alaskan tundra.

Thus we might go on, extending the records of abnormally abundant fossils to the shellfish and the other invertebrates. The modern studies of the oceans have proved that while some fossils are being formed on the continental shelf surrounding all the continents out to the depth of about six hundred feet, beyond this narrow border the depths of all the oceans are calm and motion-

less, the soft, impalpable ooze lying for centuries undisturbed by the waters, and thus not forming anything like beds or stratified deposits. This is because the ocean currents are confined to the surface waters, not affecting the waters below one thousand feet. Thus the strata which we find in the mountains and all over the continents, which are composed of sandstones, shales, and limestones in alternate layers, with the fossils embedded in them, could not have been formed under the conditions now prevailing throughout our seas and oceans. No such bedding or alternating of deposits is now found anywhere at the bottoms of our oceans, where the brachiopods and stalked crinoids so universally associated with the coal beds are found living today.

All this means that very few fossils are being formed in the oceans, while the reason why so few are being formed in fresh waters or even around the coasts is that not only the land animals, but fishes, reptiles, et cetera, tend to disintegrate rapidly when dead, and require speedy burial after death to escape decomposition and complete destruction from the chemical agents found in the air and water, as well as from the animals, large and small, which always prey upon them when exposed. Modern fishes are sometimes killed in the waters in large numbers, sometimes by violent action of the waters and sometimes by poisonous gases let loose in the water. In such cases the bodies of the fishes rise to the surface, where they are soon devoured whole or bit by bit by the other creatures nearby. That is, even when fishes are killed in large numbers, they are not buried, but soon disappear, leaving perhaps a few of the harder parts as fragments. The burial and fossilization of a land mammal is something that almost never occurs.

From all of this we see the wholly abnormal character of the ancient graveyards, where not only ocean animals, but all kinds of land animals occur in prodigious numbers in all the great mountain regions of the world, as well as deep in the flat strata of the plains.

If an honest coroner were to hold an inquest on this old world,

what would be the verdict? Could he say that "natural" or ordinary causes produced these packed graveyards? Or would he be compelled in all fairness and honesty to say that abnormal processes must have produced the vast majority of them?

Current popular geology often admits the abnormal character of these ancient deposits. The true lesson from them is evaded by the device of placing these various deposits in a long series, saying that they occurred on separate occasions, and that the various animals were not contemporary, but lived successively. This is a matter which will ultimately demand our attention. However we have other facts which must be considered before we can reach a full and final verdict.

Our next point should deal with the condition in which the vast majority of the ancient fossils are found, for they almost invariably show evidence of having died violent deaths. We will discuss this in the next chapter.

*Fossil Elephants of the Arctic
Prove Ancient World Catastrophe*

Buried Alive!

A CORONER has many criteria by which he may judge whether the body he is examining met with external physical violence or whether it shows signs of natural death. Similarly a geologist can usually judge whether the fossils he discovers were buried in some extraordinary manner or in the more orderly routine of everyday natural processes. Any person of ordinary intelligence, if he is intellectually honest, is entirely capable of deciding many geological problems, even though he may never have looked inside a textbook of the science.

The various kinds of animals have different ways of showing how they died or were buried. Land animals are seldom buried with the skeleton intact, and never do we find great numbers of land animals buried together; I mean in our modern world, or under modern conditions. Vertebrate fishes have their characteristic way of showing how they died. One accustomed to fishing recalls how fish spread their fins to the full, and twist the tail around, when suffering from a hook. Thus when we find great numbers of fossil fishes in this identical condition, we have conclusive proof that these creatures were buried alive, the sediments in which they perished having prevented any return to the natural, relaxed condition. Shellfish also can tell us of the manner in which they perished, for monovalves, such as snails, soon fill up with sediments after the animal dies and the soft parts decay.

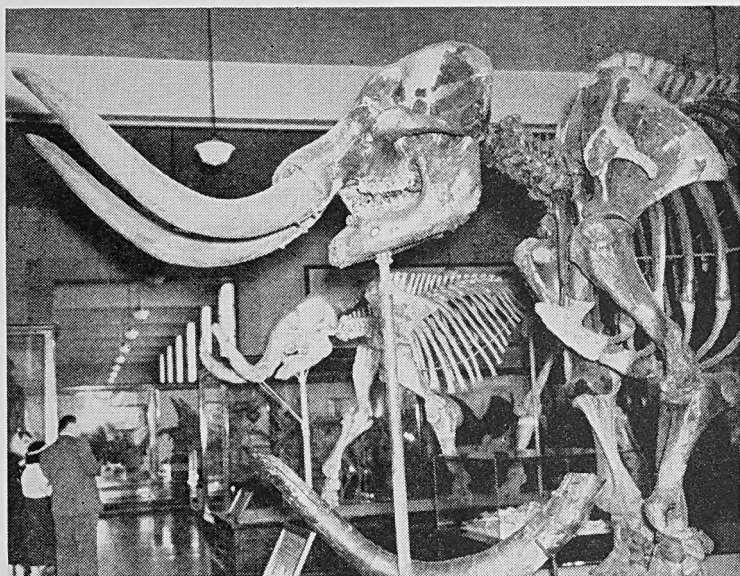
Accordingly, when we find such shells always hollow or unfilled by sediment in the fossil state, we conclude that they must have been buried before decay of these soft parts set in.

Of course a few modern instances might be found of snails that were buried alive; but when these conditions are almost universal, the examples being numbered by thousands or millions and extending through mile after mile of rocks, the truth is not difficult to determine.

The bivalves, such as the clams and oysters, also have ways of telling about their manner of death and burial. Among the many kinds, some tend to burrow in the sand or mud; thus it might seem that it would be difficult to determine whether they were finally buried before or after death. Many kinds have a strong adductor muscle in the hinge region which holds the two valves together while the animal is alive. This adductor muscle is counteracted by another arrangement which makes the valves fly open after the animal dies. When great numbers of such kinds are found in the fossil state with the valves still closed and the interior free from sand or clay, it is obvious that these also were buried before the shells opened. In fact, whenever bivalve shells occur as fossils with the two valves still applied as in life, it is good evidence that the creatures were buried alive.

Still another kind of shells, brachiopods, are among the most important of the fossils, more than 7,000 named species having been discovered, with only about 200 living ones. These have two valves, and might superficially be mistaken for true bivalves. One part is larger than the other, and instead of forming a right and a left, as in the clam, they form a top and a bottom. The soft internal parts are also entirely different from the mollusks.

The two shells of the brachiopods do not tend to fly open as in so many of the mollusks. There is a hole in the hinge region in which there exists, when the animal is alive, a soft part called the "pedicel" or "stalk," which fastens the animals to the bottom. When the animal dies, this hole would readily admit mud or silt; and accordingly, when we find the vast majority of all the



GALLOWAY

The skeleton of a mastodon, an extinct mammal similar to an elephant, is on display at the Smithsonian Institution.

fossil brachiopods of the entire world *hollow*, or free from any filling sediments (usually partly filled by pure calcite crystals), it is *prima-facie* evidence that they, too, were buried alive.

A further interest attaches to many of these fossil brachiopods. Most of their modern representatives live only in the deep, calm waters of the lower depths of the ocean, where, as we know, there are no currents or movements of the waters. Thus there are no conceivable means of burying anything in stratified sediments, without some convulsion of the oceans such as we do not experience in our modern world.

What is our amazement to find, almost universally, that beds containing these fossil brachiopods occur alternately with coal seams, the materials forming the coals, of course, being land plants

of one kind or another. How such a condition could take place—animal forms from the deeper parts of the ocean alternating with plant materials from the lands—is quite beyond our comprehension. Yet in many places we find from 50 to 100 or more distinct seams of coal one above another in the same vertical section, with shales and limestones containing brachiopods alternating between them. And these conditions prevail in scores, or even hundreds, of localities scattered all over the globe.

Plenty of fossil crinoids also occur in limestones alternating with the coal beds. Crinoids are often called "sea lilies," since they are much the shape of large lilies. The stems and corolla petals, however, are made of joints of limestone. These joints are held together by soft parts of the animal while alive, and when dead contribute to the formation of great quantities of limestone beds stretching mile on mile in alternation with the coal seams. As the stalked crinoids now living are practically all confined to the deeper parts of the ocean, their occurrence in limestones interbedded or alternating with coal seams offers the same strong evidence of a great world cataclysm in the long ago which is shown by the brachiopods. Their combined evidence is so convincing that I have never seen any reasonable attempt at explaining the facts on the basis of Lyell's theory of uniformity.

Fossil Mammals

In a previous chapter I showed how extraordinary it would be in modern times for a vertebrate land animal, such as a horse or a cow or an elephant, to be buried and thus prepared for fossilization intact, or with the bones together as in life. The same must necessarily have been true in the case of the ancient dinosaurs. Hence every dinosaur skeleton found with a considerable part of the skeleton intact or in place would be evidence of uncommon conditions. It might not be proof that the animal was buried alive, but it would be evidence that it was buried before the body had been washed about very much. In other words, if the creature was not entombed alive, it must have been speedily buried

after death; and when large numbers of such examples occur together in the same general area, we have good proof of abnormal conditions.

But the fossil elephants of the arctic are objective proofs of a world disaster which can be appreciated by even a child. Geologists have long followed the wretched custom of giving a new name to every kind of plant or animal found in the fossil state, that is, a name different from that of the living one, no matter how closely the fossil may resemble the living. The fact that these fossil elephants in the arctic are called *mammoths* tends greatly to disguise the fact that they are identical with the living Indian elephant *Elephas indicus*. Textbooks sometimes dwell on the fact that the ancient ones had a fairly good coat of hair, while the moderns have only scanty coverings. But many dogs and pigs and other mammals living in the tropics are as hairless as are the elephants. By far the most scientific marks of identification in the case of land mammals is the pattern of the molar teeth; and, judged on this method, the fossils of the arctic are identical with the living ones in India and Malaya.

In a subsequent chapter I plan to deal with the change of climate indicated by the finding of uncounted thousands of elephants away beyond the Arctic Circle. For the present let us consider in the light of available facts how these ancient animals perished. Do the ice mummies of the arctic have anything to tell us on this point?

Many Kinds of Animals Frozen

If an intact skeleton of any large animal in the fossil state is strong evidence of speedy burial after death, so as to avoid the inescapable agents of disintegration, what are we to say of elephants still in the flesh, that is, with all the soft parts intact, or at least sufficiently well preserved to afford good eating for dogs and wolves? More than one scientific man has also tried a slice of the meat and has pronounced it fairly good as elephant steaks go.

It is sometimes mistakenly thought that elephants are the only large animals thus found embalmed in the frosty ice and sediments of the north. This is not true; for many other animals, such as bison and rhinoceroses, also occur, though not in the prodigious numbers of the elephants.

Some light on the problem may be had when we consider the singular buoyancy of a dead elephant as compared with the dead body of any other mammal. All other land animals, so far as I know, always sink in the water when dead, though after a few days the gases generated by decomposition distend the abdomen, and the body then rises to the surface. On the contrary, an elephant's body floats from the first; African travelers say that it has a buoyancy capable of supporting two or three men. This may help us to understand some of the astonishing facts regarding these arctic fossils; though of course it has nothing to do with solving the chief problem: What was it that killed these animals by the tens of thousands, perhaps almost by the millions? One observer says he himself counted two thousand tusks ready for the market in one season, and this trade in fossil elephant tusks has been going on for many centuries.

Is our intellectual honesty being offered a bribe when we are approached with offers to "explain" these facts according to the theories of Charles Lyell?

The subject of a change of climate is so intimately connected with this subject that it cannot be avoided. But this phase of the problem will need to be considered separately.

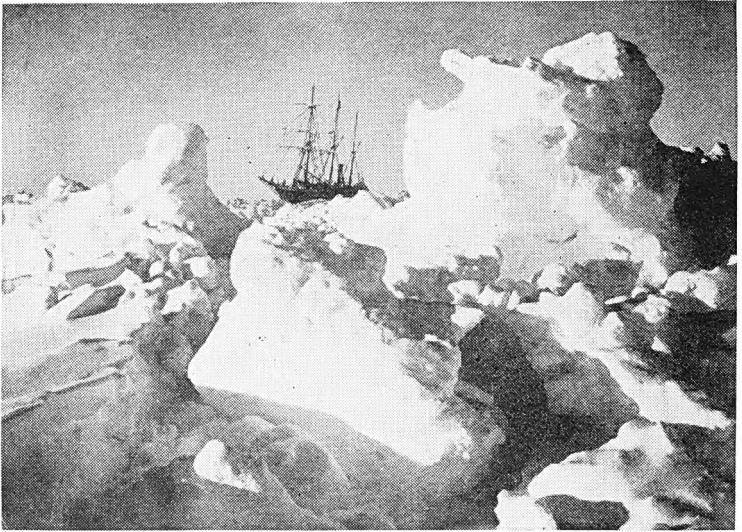
The Polar Climate

I N A previous chapter I discussed briefly some features about the great numbers of elephants (mammoths) found as fossils almost at the North Pole. Other aspects of the facts about the arctic elephants will come up again for consideration presently. But we need to get clearly in mind that these fossil elephants are by no means the only evidence we have for a former mild climate in the extreme north.

The reader needs to keep in mind that the area around the North Pole is not land but ocean, frozen over essentially all the year round. Hence we cannot present any specimens of warm-climate plants or animals from the locality itself. But we can present an abundance of evidence from all the lands adjacent to the North Pole; and from them we have conclusive proofs of what the climate used to be. Besides the elephants already mentioned, we need to consider the corals, the vegetation as shown by the coal beds, and the fossil reptiles.

Fossil Corals in the Arctic

Fossil corals are splendid evidence of what the ancient climate must have been like. All the modern reef-building corals require fairly warm water the year round, and cannot survive in any place



Explorers in the arctic regions have found ample evidence that the climate of the polar areas was not always extremely cold.

where the water gets much cooler than 68° F. Also the water must be clear and free from silt. Moreover, we know that the materials composing a coral reef cannot be transported by the currents any great distance. Hence when we find easily recognized corals in the various lands around the North Pole we have the best of evidence that the climate there must once have been warm. They could not possibly have been transported there; even the ocean water in which they lived must have been warm the whole year round.

The same evidence is presented by the abundance of reptiles which once lived there. As everyone knows, reptiles are cold-blooded animals. That is, they do not have any physiological thermostat to keep their blood always at a certain temperature, as is the case with birds and mammals. They cannot thrive where the temperature of the air (or water) becomes icy cold. Yet I

once saw in the museum in Uppsala, Sweden, a large showcase full of the bones of reptiles found as fossils in Spitzbergen, which is far within the Arctic Circle, where no such creatures could possibly live today.

Similar testimony is given by the plants and trees which have been found in almost all the lands around the North Pole. When well-preserved leaves are found in the shales or limestones, with all the perfection of the specimens in a botany book, the kinds of plants or trees are easily recognized. About all the lands in the arctic region have furnished specimens of the kinds of vegetation which formerly flourished there.

Carboniferous coal beds and limestones are the nearest known rocks to the North Pole. They crop out all around the polar basin; and, from the dip of the beds, they must underlie the polar sea itself. But coal beds of the other systems also occur in Greenland and the other polar lands, and dozens of the deciduous trees of America and Europe have been recognized, also several which are confined to still warmer latitudes, such as grapevines, magnolias, and the breadfruit tree. But maples, birches, beeches, elms, walnuts, and about all the other plants and trees of America and Europe have been found in these regions. The evidence is not of stunted or dwarf forms; they all seem to have had both soil and climate which made them flourish in profusion, showing that they must have enjoyed optimum conditions.

Thus we have a combined evidence from the corals in the ocean, the land animals, and the plants and trees, all testifying that a warm, springlike climate prevailed all around the polar region. As stated above, we cannot show any evidence from the site of the North Pole itself, for this is sea or ocean. But the evidence is plain and unanswerable that formerly a mild, genial climate must have prevailed without any wintry interruptions throughout all the arctic regions. We may not be able to explain how such a condition was possible. Various explanations have been proposed, which we need not discuss here; but the evidence for the fact of a former warm climate is conclusive.

As for the south polar regions, splendid coal beds have been found there; but the region around that part of the earth has been geologically examined in only a few places. The evidence, such as it is, indicates that a warm climate also prevailed there in the past.

No Shifting of the Poles

Strangely enough, whenever mention is made of the former warm climate at the poles, many people who know nothing about these matters immediately begin to suggest that the poles must have been situated somewhere else than at present, thinking that such a shift of the polar rotating centers would explain the situation. Needless to say, this is regarded as scientific nonsense. I do not know of any competent student of these subjects who believes that the poles have ever been situated anywhere else than they are at present. All the available lines of scientific evidence from astronomy, physics, and geology unite to fix the poles exactly where they are now. The evidence for a former mild climate at the poles has to be accounted for in some other way than by a shift of the axis of rotation.

Fossil Elephants

Let us now return to the fascinating subject of the elephants in the far north. Much plain nonsense has been written on this subject, and some of this pseudo science has even found its way into respectable journals and books. For instance, some writers have seriously tried to defend the idea that the ancient elephants (mammoths) may have lived in about the same sort of climate which now prevails there. They point to the coat of hair these animals had, and argue that it was probably sufficient to keep them warm. In a museum I once examined about two square feet of fossil elephant skin, with the hair upon it; but while the individual hairs were several inches long, they were thinly scattered, and the total quantity was not much more than is to be found on my semibald head. Such a pelage would offer a pre-

carious protection against even a New York winter; it would be practically useless in a modern arctic winter.

What about food? What would herds of thousands or even millions of these animals have to eat in a place at all similar to our present polar regions? The elephant is notorious as an animal with a big appetite.

For that elephant ate all night,
And that elephant ate all day;
Do what we could to furnish him food,
The cry was still, More hay.

It is not realistic or candid science which would attempt to defend the idea that vast herds of elephants could possibly subsist on the scanty, stunted vegetation of our modern arctic regions.

Again, what protection would the poor creatures have for their ears and trunks? In the first zero night these fleshy appendages, with not even the scanty covering of hair found on the rest of its body, would freeze solid, as a Minnesota schoolboy's ears and nose may sometimes solidify under only a few minutes of exposure. Will any zoologist undertake to tell us how an elephant could survive with a frozen trunk?

Mild Climate Once Universal

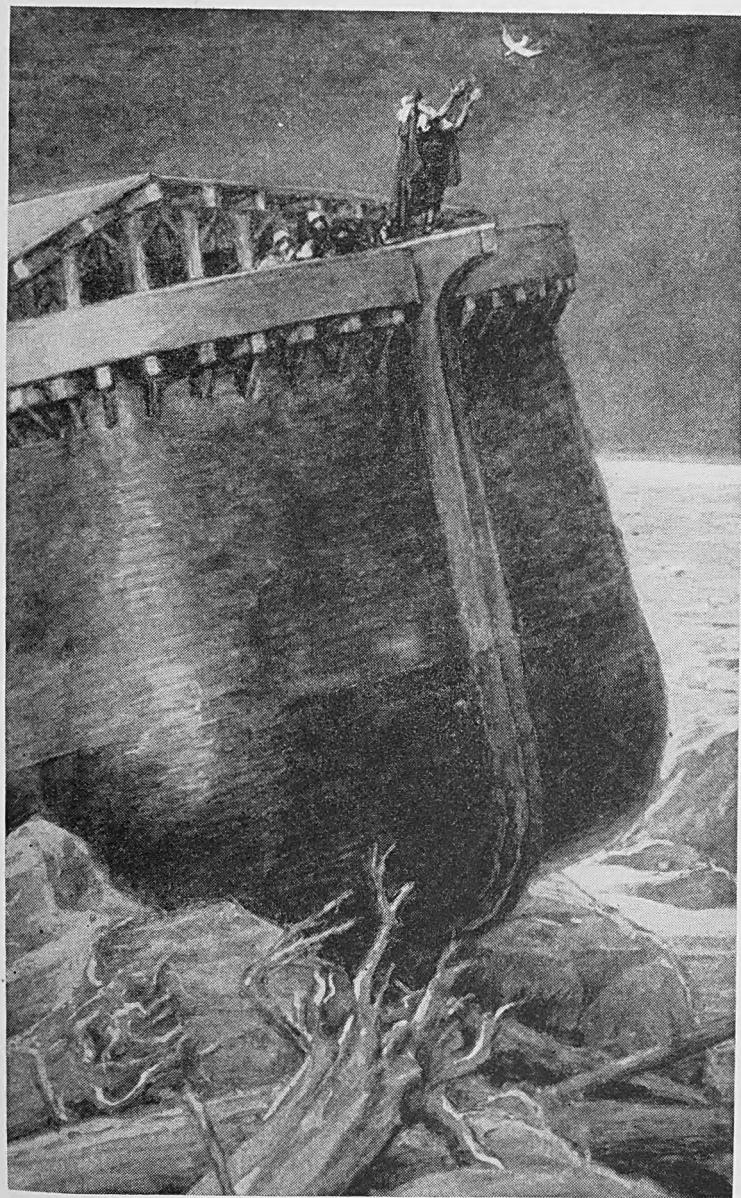
From all these various ways of considering the matter, it is abundantly clear that in ancient times a genial, mild climate must have prevailed over the entire globe. We know that there is plenty of heat coming to us from the sun to warm the entire earth, if it could be evenly distributed. Evidently in the ancient world the solar heat was thus proportionately distributed, so that the tropics were not unduly warm, and the polar regions were heated sufficiently to maintain a mild climate throughout their entire extent. No less an authority than Alfred Russel Wallace, regarded generally as Charles Darwin's partner in the theory of organic evolution, tells us that the entire geological history presents "one uniform climatic aspect of the fossils." This means that there was only one climate known to the ancient world, and that was

a universal mantle of springlike loveliness which seems to have prevailed without interruption of any kind, until that fatal day when it was changed, and changed with dramatic suddenness and completeness.

The complete change of climate was as sudden as it has been permanent. Both the suddenness and the permanence are proved by the frozen elephants in the arctic, which were put in cold storage before the meat on their skeletons had decayed, and which have remained in this condition ever since. We cannot understand how such an awful change came over this part of the earth; but these arctic ice mummies are objective proofs which cannot be explained away.

This change of climate must have affected the entire globe. It would be impossible to bring about so radical a change of climate over all the northern parts of the world without also affecting to a considerable degree the climate of all the rest of the earth. The fact is that formerly the entire earth must have had a mild, equable climate all over its surface; now we have two refrigerating plants at the points of the earth's rotation, and these two permanent sources of cold are largely the cause of the present extremes of climate which almost every part of the earth's surface experiences at some time of the year.

It seems almost certain that this sudden change in the earth's climate was part of the cosmic change which the Bible describes in the sixth to the ninth chapters of Genesis. The apostle Peter tells it all in one sentence: "The world that then was, being overflowed with water, perished." 2 Peter 3:6. The burial of the fossils and the complete change in the earth's climate are only different aspects of the same event; and the objective proofs of what then occurred can be examined and studied by all who wish to understand God's ways of dealing with sin and sinners. Peter in this same epistle goes on to declare that the next time God deals with the world in judgment, it will be by fire instead of water. Water effected only partial changes; the results of the fire will be complete and eternal.



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The complete remodeling of the earth at the time of the Flood must always be taken into account whenever we consider the origin of things.

*Did All Fossil Animals Die
in One Sudden, Universal Disaster?*

Fossils and the Flood

THE cosmogony of the Bible consists of two parts. In the Genesis record of the beginnings of the world the creation does not stand alone; it has a supplement, a modification. The world had not been running long before it became evident that the splendid climate and profuse abundance of food of that perfect earth was far too good for a race of rebels. So the wise and merciful Creator had to make the earth over into something better suited to the changed condition of mankind. The perfect world as first created could not teach man the moral and religious lessons he needed to learn. The complete remodeling of the earth at the time of the Flood must always be taken into account as an important part of the divine cosmogony, whenever we attempt to consider any problem connected with the origin of things.

Its rival cosmogony, now so universally taught in all the colleges and universities of the civilized world, similarly consists of two parts, though these first appeared in the reverse order of that stated by Moses. In the Christian cosmogony as stated in Genesis the geological part is given as a modification, or a readjustment. But in its rival, as taught by Cuvier and Lyell, and championed by the "harmonizers" of the Victorian era, Louis Agassiz, Hugh Miller, W. E. Gladstone, and a host of others, the geological part was taught first, and the world soon became familiar with the suc-

cessive geological "ages," in which the six days of the Mosaic record were stretched out into immense periods of time, though all the earlier advocates of this scheme stoutly maintained that these "ages" were the exact scientific duplicate of the Biblical days of creation.

Ellen G. White gave a true evaluation of this geological scheme as a counterfeit or burlesque of the Bible record of creation, and declared that it is really "infidelity in its most insidious and hence most dangerous form."—*Patriarchs and Prophets*, page 111. The subsequent history of the full development of the idea has abundantly proved how true this evaluation was.

William Ambrose Spicer once remarked that the subject of creation is much like a live high-voltage wire, in that no one can touch it without mortal danger, unless he handles it exactly according to God's own plan. This is why the geological counterfeit of creation is such a dangerous idea and why it has led almost the entire Protestant world so far astray.

My space will not permit me to discuss even briefly the second or biological part of the Lyell-Darwin cosmogony. Darwin's theory about the origin of species was in reality only a minor part of this anti-Genesis campaign, which has been so successful on a world-wide scale that the Bible-believing Protestantism of our forefathers has become transformed into the Bible-doubting liberalism, or modernism, of this middle twentieth century. This modern Protestant apostasy on a world-wide scale has been due far more to the false geology of Charles Lyell than to the supplementary biology of Charles Darwin. Lyell prepared the world for Darwin. If intelligent Christians of today desire to retain the Mosaic cosmogony, they must deal intelligently with the geology of Lyell. The encouraging part of the situation is that whenever we face the geology of the one, we never have any trouble with the biology of the other.

In previous chapters I called attention to the strange, abnormal conditions connected with the burial of almost all the fossils. The thousands of elephants entombed in the ice of the arctic regions

are only one class of examples. The fishes in the oil shales that extend for mile after mile across an entire continent were obviously all buried alive in the sediments which now envelop them. The fossil shells in so many thousands of instances also show plain evidences of having been buried while the soft parts were still within them. The packed graveyards where dinosaurs and other large land animals occur like logs in a river jam are similarly proof of abnormal conditions.

Were They Contemporary?

Now, anyone can see that if all these abnormal burials were contemporary, there could be no question about correlating them with the world disaster described in the Bible as Noah's Flood. Geologists protest against any such correlation, and assure us that they can assign relative dates to all the various fossiliferous deposits, and by this system of differential dating they have convinced the entire world that instead of being contemporary, the ancient plants and animals existed and died in relays, a few at a time, the entire process extending throughout hundreds of millions of years.

All the world has become familiar with this idea of the geological ages as extending throughout uncounted millions of years. Few realize that this idea has been built up entirely on the differential dating of the fossils. If geologists have the magic skill of knowing the relative ages of all the various fossils, so that they are sure that certain ones lived before or after others, and so on all over the world, then of course it would be a great mistake to think that all the various kinds were contemporary, and were really buried at the same general time, or by the Flood of the Bible.

How to Find the Answer

What is an intelligent Christian to do in such circumstances, if he is resolved to remain intellectually honest? He remembers the promise to those who feel that they lack wisdom, which will be given "liberally" to all who ask in faith. James 1:5, 6. The

Master Himself has promised that He will guide us into all truth. John 16:13. Because of these assurances he realizes that he has no more justification for remaining ignorant or a fool than for remaining a sinner. Where and how is he to find the answer?

When confronted with a specific example of a poor fellow traveler on life's way who has been stripped of his intellectual clothing, beaten by the geological robbers and left half dead through his loss of confidence in God, thousands act with the selfish indifference of the priest and Levite in the parable. These men merely looked on the problem, decided that it was none of their business, and passed by on the other side.

Some cannot be content to be thus indifferent. They may be working daily alongside professional men of science, for whom the reading and interpretation of the book of nature constitutes the chief business of life; and such people almost always decide to take the side of what they suppose to be the teachings of God's oldest testament, whenever an apparent contradiction arises between it and the Bible. Or they may have as their daily business the instruction of wide-awake college upperclassmen who are eager to find the answers to all the pressing problems of our day.

How to make an honest and intelligent choice between the geological "ages," based on the differential dating of the fossils, and the plain Bible record of a creation in six literal days, was the problem I felt obliged to study more than a half century ago. To solve the problem, I had available for study all the standard books on geology, plus the numerous ponderous volumes issued by the governments of the United States and Canada as *Reports*. But with all my searching I could not find a single work which raised the slightest suspicion against the accuracy of these geological "ages," or against the fundamental methods of reasoning employed in arranging the fossils in the alleged exact chronological order. Also I did not know of a single human being who could help me. I was alone with my problem. I appealed to God for wisdom, according to the promises mentioned above. Thus the outcome must not be credited to me, but to the Source of all wisdom.

I reasoned that the best way to understand any scientific problem of this character is to get at its history. So I acquired and read everything then in print dealing with the history of the early days of the science. Several more years were devoted to an intensive study of all the more important geological discoveries. The results which I found, both in the history of the science and in its more mature progress and discoveries, seemed so incredible that my earliest books on these subjects were mere trial efforts for the purpose of seeing what opponents could offer in the way of criticisms or corrections. It was not until I had been working for a full quarter century that I ventured to publish a college textbook in which the science was reconstructed along strictly inductive lines, wholly discarding all cosmical speculations, and framing general conclusions only after all the available evidence had been presented. This textbook made a mild sensation when first published; thereafter during another decade or so a lively battle in books and periodicals was carried on, until the notorious "monkey trial" took place in Tennessee. After this, matters soon settled down, and the world went on as before, with almost everybody still more confirmed in his belief that the evolutionary system of geology is right, and the Bible record of a literal creation only a beautiful myth or allegory.

However, there are a few thousands scattered over all the continents and in about all the more important languages of the globe who now know certain highly important facts which were not available at the end of the nineteenth century, when I first began my study and investigation of these subjects. I shall try to list some of these facts briefly here, referring the interested reader to my published works for the proofs and the details.

The First "Onion-Coat" Theory

1. Between the years 1700 and 1800 practically all the scientists of the civilized world accepted the Flood as the explanation of the fossils.
2. About the time of the French Revolution, and as an exten-

sion of that age of infidelity into the field of earth science, there arose what has since been nicknamed the mineral "onion-coat" theory. Beginning in Germany, it rapidly extended to the universities of Scotland, Ireland, England, and America. Briefly stated, it undertook to explain the origin of all the minerals and rocks of the globe as chemical precipitates from a universal ocean, these precipitates being necessarily deposited in layers in a series outside one another like the coats of an onion. The originator of the theory had never traveled outside his narrow home province of Germany; all the first teachers of the theory were untraveled men, and were childishly oblivious of all the rest of the world. Nevertheless this mineral onion-coat theory was promulgated with all the zeal and dogmatism of a new fanatical religion. It lasted well along into the nineteenth century; but as the fervor of its evangelists died out because of the numerous discoveries of rocks in a sequence flatly contradicting the theory of mineral onion coats, the fossils became the new means for identifying the different strata, "index fossils" were substituted for "index minerals," and the old mineral onion-coat theory gained a new life as a fossil onion-coat theory and rapidly developed into the geological theory as taught today.

3. There never was the slightest effort made in the early days to *prove* that the mineral onion coats were actually universal around the globe. It would be impossible to prove any such thing; it was assumed, or taken for granted. When the promoters of this theory shifted from mineral onion coats to fossil onion coats, no one ever took the trouble to try to *prove* that the "earliest" kinds of life (*viz.*, the Cambrian) were actually to be found all around the globe. This also continued to be quietly taken for granted; and then their dogmatic chronology kept on as before.

4. Never in all the history of geology and biology has anyone attempted to prove that the Cambrian forms of life, for instance, or those of any other formation, were universal around the entire globe, or that distinctly different plants and animals, such as the Cretaceous, or the Tertiary, were *not* then living somewhere on

the other side of the world. In the early days, when the geology of foreign countries was wholly unknown, it seems to have been easy to get by with such an assumption; for it was not questioned. Today nobody would dare to undertake to prove the universal spread of the Cambrian, or of any of these so-called universal formations. It is a well-known fact that in Southern California the Tertiary is in the bottom position, or next to the old crystallines, and is as highly consolidated and crystalline as any of the so-called oldest strata. In Georgia and other parts of the southeastern United States it is the Cretaceous which is similarly in the bottom position and highly indurated and crystalline. So on all over the globe. Every single one of the standard formations is found somewhere in this same bottom position, or next to the granite. It would be folly to try to prove that all these varied forms of life did not originally live contemporaneously in the ancient world.

In another chapter we may continue this subject, showing by undisputable facts that all the various kinds of life must have lived contemporaneously in the ancient world. They were overwhelmed together in a common world disaster, which of course must mean the Flood described in such detail in the book of Genesis.

*"Speak to the Earth,
and It Shall Teach Thee."*

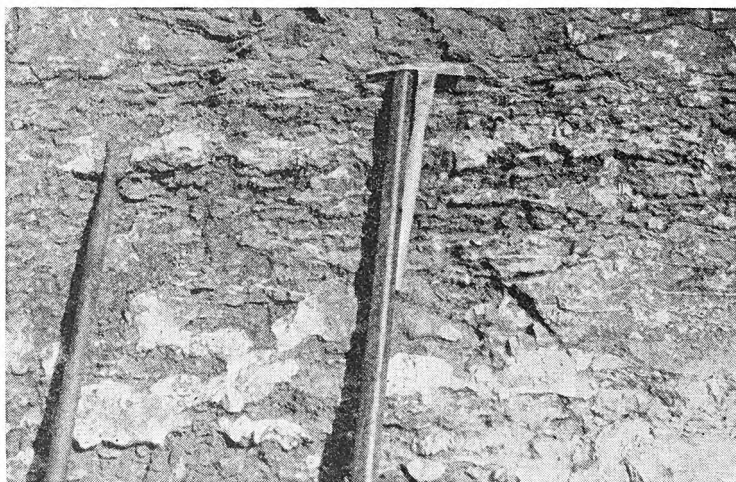
The Age of the Rocks

I WISH the reader would imagine that we are going out to a big cut in the mountains, to see what we can learn there.

Let us suppose that we have a good exposure of three different kinds of beds: a dark, partly crystalline limestone at the bottom, a red shaly sandstone next above it, and at the top a well-consolidated conglomerate, which means a gravel bed cemented together, often called a pudding stone.

A person does not have to be a geologist to know that these have all been made by water. That is, currents of water from different directions, and carrying these different materials, deposited these beds here in the order in which we now find them, one above another. This relative order of superposition plainly tells us the relative *age* of these beds. The limestone must have been deposited first, the sandstone next, and the gravel bed last of all.

Whether these three beds followed one another in fairly quick succession, or whether a somewhat prolonged interval elapsed between them, can be decided with considerable accuracy by examining the contact lines between them, to see if there has been any erosion of the top surface of the lower bed, or any loose pieces of the lower bed incorporated in the bed above it. By such observations we can judge whether the lower of any two beds was still soft and unconsolidated when the next one was deposited



U. S. G. S.

A close-up view in Shank's quarry, Louisville, Kentucky, showing the "deceptive conformity" between the Middle Devonian above and the Middle Silurian below.

upon it. We also need to notice whether an exact parallelism prevails between the various layers; for sometimes we see a proof of disturbance of the lower one before the next bed was laid down.

If two successive layers seem to have followed each other in fairly quick succession, with no signs of erosion or disturbance of the lower one, we say that the two beds are *conformable*, or there is *conformity* in their bedding. If a true conformity can be traced between the limestone and the sandstone, or between the sandstone and the conglomerate, for a considerable distance, we can be confident that no great lapse of time, such as a thousand years or a million years, could have elapsed between them. We need to remember this meaning of *conformity* for it is an important factor in judging the popular theories about the way the fossils were formed.

Another somewhat related problem has to do with the relative ages of the three materials here involved.

When we agree that the limestone was laid down in this locality before the sandstone, and the latter before the pudding stone or conglomerate, it is self-evident that we are dealing only with the relative *acts* of deposition, and that we are making no pronouncement and can make none about the relative age of the three kinds of *material*. Lime silt, the material of which limestone is made, and sand and gravel are all existing in our modern world contemporaneously; and we have no evidence whatever that all three kinds were not existing contemporaneously in the long ago, whenever they were formed. Hence when we decide that the material of the limestone was laid down here before the sand, and the latter before the gravel, the relative dating which we employ has to do only with *the mere acts of deposit*, and has nothing whatever to do with the relative ages of the materials of which they are composed.

All this is so self-evident that it needs only to be mentioned, though this highly important principle is constantly overlooked by geologists.

Relative Age of Fossils Not Shown by Stratigraphy

We can at once extend the principle to include whatever fossils we find in these three beds. I hope that the reader has not forgotten that we are dealing chiefly with the fossils, and that we must always keep in mind the two alternative theories: whether they existed in the same world contemporaneously, and were destroyed essentially at the same time in the same world disaster, or whether they existed only in relays, and were buried at long intervals, extending throughout many millions of years.

Let us now suppose that we find trilobites, brachiopods, and crinoids in the limestone, dinosaur bones in the sandstone, and teeth and bones of mastodons and other elephants in the conglomerate. Does the presence of these fossils give us any additional information concerning the dating of these deposits, or concerning the lapse of time between them? Is it still not as true that the relative superposition here shown has to do solely with

the acts of deposition, and can prove nothing regarding the differential dating of the kinds of living things here buried?

How Fossils Are Used to Tell Age

But the evolution-minded geologists think differently. They are not concerned in the least with any differences in the ages of the limestone materials, the sand, or the gravel, and tell us rightly that their relative superposition here has nothing to do with the ages of the material before they were deposited. They may very likely have been in existence contemporaneously, the varying currents happening to place them here in this particular sequence. But they say that when these fossils have been found, the problem is solved immediately. For they declare with the utmost positiveness that the trilobites lived in the earliest ages of the earth's history, and were all dead for a long period of time before the dinosaurs came into existence, and the latter in turn were dead and gone long before any such animals as the elephants appeared. They would be inclined to hold up their hands in horror at any mention of the possibility that these creatures could possibly have lived contemporaneously and been destroyed together.

It would not make the slightest difference to these geologists whether or not the sandstone appeared to be perfectly conformable to the limestone, or the conglomerate to the sandstone. Hundreds of such examples of beds containing dinosaurs (Cretaceous) have been found in all parts of the world in true conformity upon others containing trilobites (Paleozoic), or of beds containing elephants (Tertiary) upon those with dinosaurs. Several dozen examples have been discovered of *the reversed order*, with the Tertiary below and the Paleozoic on top, or with the Cretaceous below the Paleozoic. Such examples make no difference to geologists. They can be depended upon to invent ingenious if not entirely convincing explanations; but they still stick to their original thesis that the trilobites lived long ages before the dinosaurs, and the latter before the elephants and other mammals. In all discussions of such questions they act much like the Scot

who protested that he was open to conviction, but would like to see the man who could convince him.

We are led to ask, *How did the geologists first arrive* at this settled conviction about the relative dates of these and the other fossils? If superposition deals only with the mere relative dates of deposition, and can tell us absolutely nothing about the dating of the materials involved, how can it possibly do any more concerning the objects (fossils) in these materials? If relative superposition cannot tell us anything about the dating of the fossils, how and when did the geologists learn to date them in a true and reliable historical sequence?

It is a long story, too long to be given here. The interested reader may consult some of the books dealing with this subject,* published by the publishers of this book.

In a pervious chapter I mentioned an absurd theory, one about mineral onion coats, which was taught in the early days of geology. It was followed by a somewhat similar theory of onion coats of various successive kinds of fossils. Then mental habits to which geologists became addicted under the mineral onion-coat theory were carried over when index fossils replaced index minerals. But no more evidence has ever been given for the universal spread of only one kind of life in the early days of the world, than for the universal spread of only one kind of mineral deposit. In some limited areas the so-called oldest kinds of fossils occur in the bottom position, or next to the primitive, as was the case with the oldest minerals of the old onion-coat theory; but the biological onion-coat theory of the present popular geology is no more reasonable and no more capable of scientific justification than is the former one. Both alike can maintain their standing only at the cost of reasoning in circles, and by denying great hosts of solid, scientific evidences.

**The New Geology—a Textbook for Colleges* (1923) is now out of print and can be found only in secondhand bookstores. *Evolutionary Geology and the New Catastrophism* (1926) is still available, also *Common-Sense Geology* (1946). All are by George McCready Price, and are published by the Pacific Press, Mountain View, California.

The examples I have been dealing with are sometimes called "deceptive conformities" by geologists, a name which seems hardly fair, for it seems to imply that nature is trying to deceive us. These examples look as if the two sets of beds had followed in quick succession; for the conformity appears to be perfect. The geologists think they know better. They say that the vast interval of time here absent without trace is well represented elsewhere, perhaps on the other side of the globe. So they trust their theory to supply the "ages" here unrepresented by either deposition or erosion, and charge that the apparent conformity is "deceptive," not real.

How difficult it would be to refute a theory which can so readily supply missing evidence, and charge nature with trying to deceive us!

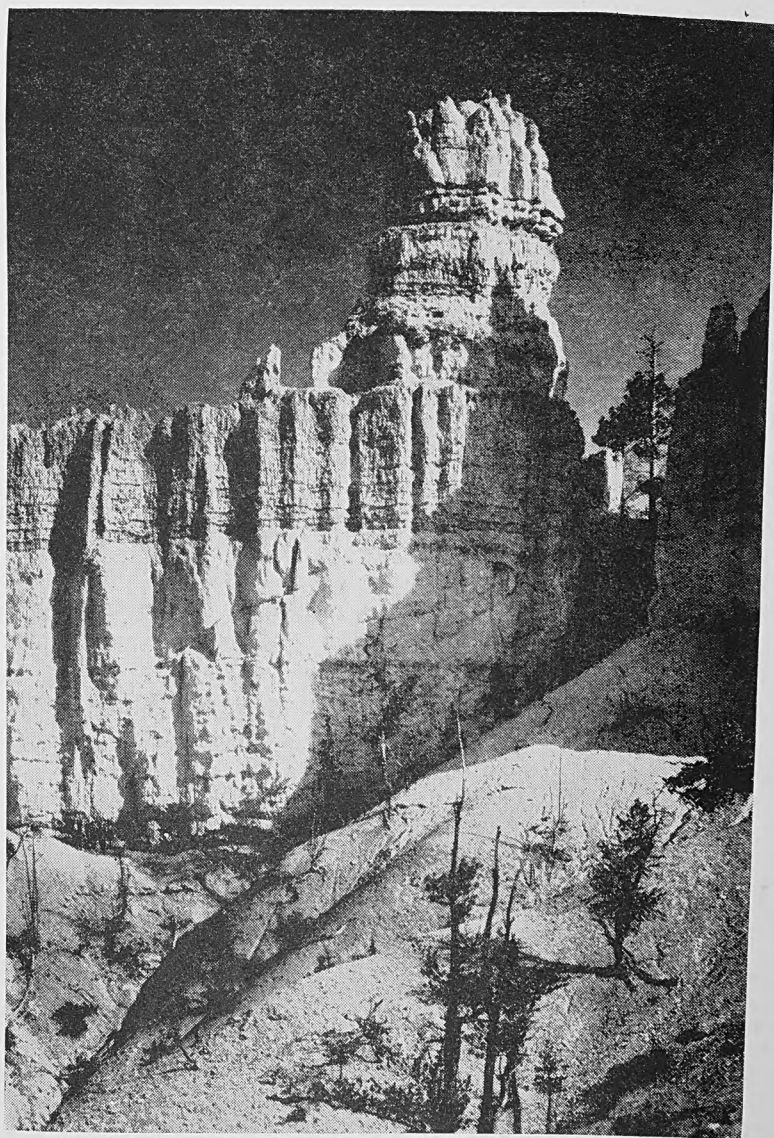
Literally hundreds of examples have been found in all parts of the globe of what are called "young" beds resting in complete conformity upon others classed as much older, the vast interval of time alleged to have been intervening being unrepresented by either erosion or deposition. It is as if nature had completely suspended action over these localities, the waters neither wearing away nor depositing anything over these taboo spots for all these millions of years. Yet the conformity is perfect, and in numerous instances it is exactly the *same kind* of limestone or shale which was again deposited, and the two age-separated formations look exactly *like one continuous formation*, and the two "ages" can only be separated by their fossils.

In such cases it takes a vigorous will to disbelieve plain evidence, to say that two vastly different ages are represented here, when they look exactly like one.

Truly an iron dogmatism like that of evolution imposes hard tasks on the intellect of those who follow it.

In another chapter we shall consider the many similar examples of what look exactly like true conformity, but with the fossils in reverse, the so-called "older" being on top, and the "younger" underneath.

The reader will be assured beforehand that the geologists will make frantic attempts to explain away these examples of upside-down conformities; but the examples are many and well known, and are scattered all over the globe. They should serve to discredit completely the common theory of the fossils in a long series, with their relative dates known by geologists, and the entire series serving as the chief foundation for the theory of organic evolution. The reader needs to remember constantly that the geological "ages," constructed by the differential dating of the fossils, is the devil's counterfeit of the six days of creation as recorded in the first chapter of Genesis.



COURTESY UNION PACIFIC RAILROAD

The Cathedral in Bryce Canyon National Park, an example of what occurs as the result of wind and water erosion.

Wrong-Way Fossils

IF ANY of my readers happen to have personal discussions with geologists, they should never allow these gentlemen to forget the old mineral onion-coat theory of a century and a half ago. For, as Herbert Spencer once remarked, though the former onion-coat theory is supposed to be dead, its spirit is still recognizable "in a transcendental form" in the modern theories about the "ages,"—each characterized by special kinds of fossils,—theories of biological onion coats which are still taught in almost all the universities of the entire world. This modern onion-coat theory is fully as absurd and unscientific as was the older one.

The history of the transition from the older form of the theory to the newer has never been written by any historian. The records are scattered in many old volumes in three or four languages, volumes which are mostly unknown even by professional geologists, and of course are never read in these days of hurry and confusion.

I have never found any geologist who was particularly interested in the history of the change-over from the mineral onion-coat theory to the modern biological form of the theory. The reason is not hard to guess. All geologists are amused and ashamed at the first onion-coat theory; and they do not show any enthusiasm in tracing the history of the change to the more mod-

ern one, probably because they dimly realize that one kind of fossiliferous deposit all over the earth in the early days is as incapable of proof, and as absurd, as was the assumption of one universal kind of mineral.

It took more than half a century to complete the change from index minerals to index fossils as the supreme test of age. Even now there are some half-informed writers on these subjects who keep protesting that the fossils are not used as the supreme test of the age of an ancient set of rocks. The full proof of this must be postponed until another chapter. I have explained elsewhere that all the common-sense rules of identification are employed in differentiating the *local* deposits, as they are used in locating oil or coal; but when it comes to pigeonholing the local formations in the larger categories, the *systems* and the *groups*, the fossils are the supreme criteria of age.

The Counterfeit of Creation

The men who worked with the earlier or mineral form of the theory of the earth were not exactly atheists; for it takes a violently fanatical form of anti-Christianity to make an atheist. They were merely godless. They were not concerned with any religious ideas, or with any possible bearing which their scientific theories might have upon religion.

But all the early men who started to substitute the fossils for minerals as the test of age were nominal Protestants, and repeatedly declared that they were tracing the footprints of the Creator, and called the fossils the "medals of creation." I refer to such men as Baron Cuvier and his pupil Louis Agassiz, also Adam Sedgwick and Hugh Miller, with Sir John William Dawson and W. E. Gladstone as the last of the "harmonizers" of the Victorian era, who professed to explain how the geological "ages" are the scientific equivalents of the six days of creation, as recorded in Genesis. This also is a chapter in the history which will need further discussion at some later time.

As stated above, it took the length of about one full lifetime to

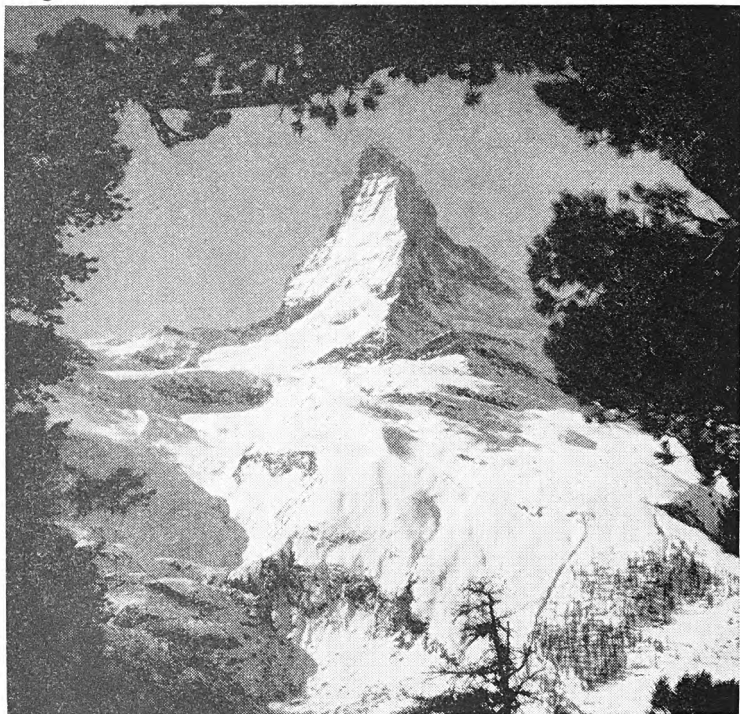
switch from index minerals to index fossils, and to establish the latter as the supreme tests of the age of the rocks. For many long years the fossils were only one of the criteria among many. The final test came in connection with some rocks in the far northwest of Scotland, where the famous "Highland Controversy" started about 1854 and continued until near the end of the century. Beds which had been described by some of the ablest geologists, as Murchison, Lyell, and Geikie, to be naturally *conformable*, were discovered to contain fossils in the "wrong" order, or in a sequence contrary to that which had become recognized as standard for all the world. Concerning the natural appearance of these beds, Dana wrote later that the so-called *thrust* planes "look like planes of bedding, and were long so considered." Geikie also records the apparent naturalness of the beds:

"Had these sections been planned for the purpose of deception, they could not have been more skillfully devised. . . . And no one coming first to this ground would suspect that what appears to be a normal stratigraphical sequence is not really so."

But the fossil evidence finally won out, and now the textbooks all tell us that in these Highlands of Scotland the upper beds have been pushed for miles into their present position. Similarly in the thousands of subsequent discoveries which have arisen in all parts of the world, whenever the natural stratigraphic sequence has plainly contradicted the evolutionary sequence of the fossils, the latter has sooner or later been recognized as the final test of age, and some method has been devised for explaining away the physical or stratigraphic contradiction which is so plain that anybody can see it.

Subterfuge to Explain Away Evidence

Soon after the fossils became recognized as the supreme criteria of age, there was still a prolonged discussion whether the parts of the earth in question, usually many square miles in area, might not have been all lifted up bodily and flipped over like a big pancake. Thus Dana speaks of a case in the Alps which "has put the



GALLOWAY

The Matterhorn, 14,780 feet high, is declared by sober-faced geologists to be out of place. They declare that it has been pushed some sixty miles south of where it once stood!

beds upside down over an area of 450 square miles." In the Glarus Canton of Switzerland it was long taught that the beds from both sides had been folded in toward the Sernf valley in a big double fold. But these theories about gigantic folds have by now been quite universally discarded in favor of flat-lying thrust faults, as they are called in the geological literature. These low-angle, or flat-lying, thrusts are now the usual explanation for all cases where the fossils are found in a sequence contrary to the

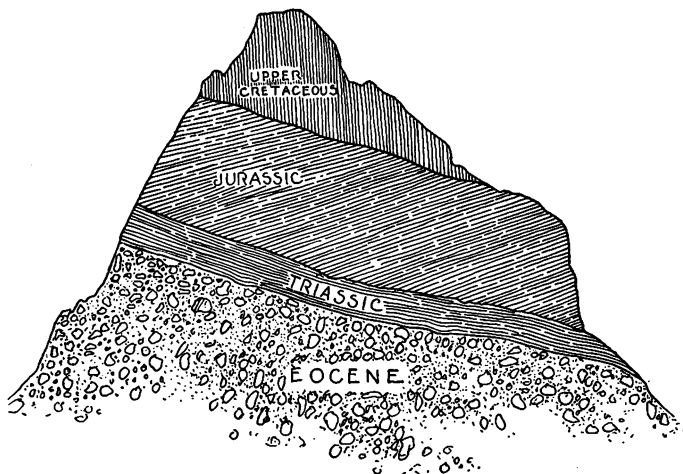
standard one recognized as the true order for all the world.

In almost every quarter of the globe large areas have been discovered where the fossils are in the "wrong" order. In the Salt Range of Pakistan the main parts of the mountains are Cambrian (Paleozoic), but the beds beneath are Tertiary. Within recent years there has been a lively discussion concerning this situation, with not a few pointing out the utterly false scientific method of explaining away plain physical or objective evidence, in favor of a wholly speculative theory concerning the fossils.

In the Appalachian Mountains of eastern Tennessee and northern Georgia, also in the mountains of Sweden, are other examples.

In Switzerland one of the most picturesque examples is the Great Mythen, with the Little Mythen close by it. They are situated near the east end of Lake Lucerne, and are plainly visible from a boat almost anywhere on the lake. This isolated peak is regarded as one of the greatest puzzles of the Swiss Alps. Even at a distance of several miles the different strata composing it are easily recognized, the yellowish-red (Cretaceous) rocks composing the top being easily distinguished from those below. Some grayish limestones (Jurassic) are next below, while the base is rated as Eocene (Tertiary), which is widely distributed through Switzerland as the bottom rocks, various so-called older rocks comprising most of the peaks.

As there are no other mountains near the Mythen which at all resemble the cap of this mountain, the geologists are much perplexed to know where this cap came from, one even saying that it must have fallen down from the moon. If the popular theory is discarded, this mountain is easily explained as an *outlier*, left standing alone by the erosion of the strata all around it, the beds being exactly in the order in which they were deposited. That the mass of this mountain was pushed over the Eocene (Tertiary) strata now under it, is incredible, and this incredible push has been invented merely to save the popular theory about the invariable order of the fossils.



The Great Mythen peak in Switzerland is a puzzle to evolutionary geologists, because its strata of rocks are laid down in a way that is not in harmony with evolution's scheme. The "younger" layers of rock are on the bottom when they should, according to the accepted theory, be on top.

One of the most famous mountains of the world is the Matterhorn, known also as Mont Cervin by the French. It is situated in the south of Switzerland near the Italian border, and its top is 14,780 feet above sea level. But the geologists tell us with a sober face that it does not belong where we find it, but that it has been pushed some sixty miles from the district farther south.

In the Rocky Mountains

The famous Rocky Mountain region of Montana and Alberta, extending from the middle of Montana some five hundred miles northward, consists of Cambrian and other Paleozoic limestones and quartzites sitting in apparently normal position on Cretaceous shales, the latter much softer than the mountain parts above them. These Cretaceous shales extend outward and compose the plains to the east, and contain an abundance of coal and oil, with

dinosaur bones also in great abundance. These soft Cretaceous beds extend under the Rockies to the west, and to the west of Banff where there are the good anthracite coal mines, with outcroppings of oil in the Flathead Valley. They also extend farther north across the international boundary line, and again northeast of Banff, in the vicinity of Edmonton.

Around Banff the strata of the Paleozoic have been considerably disturbed. Those who know this region only around Banff receive an altogether erroneous impression about the condition of these Paleozoic beds. They should travel north and south, east and west, across the ranges, and should examine such localities as Crowsnest Mountain, Cutbank Creek, Chief Mountain, Mount Assiniboine, and other easily accessible localities, and should note how the Paleozoic are largely flat and horizontal, and wherever talus does not cover the underlying contact line, almost always appear to rest in natural conformity upon the underlying Cretaceous. Almost universally throughout this vast region of at least ten thousand square miles, the upper or so-called "older" rocks look exactly as if they were deposited in the place and in the order in which we find them. Unless previously prejudiced by a false theory about the fossils, every intelligent mind would so conclude.

Accordingly, all these many examples of the geological ages in reverse prove conclusively that the popular theory about the relative ages of the various fossils must be wrong. The other theory that the plants and animals lived contemporaneously, and were overwhelmed and buried in a gigantic world disaster, explains the facts far better than does the common popular theory.

*Can the Age of Rocks Be Determined
by the Kind of Fossils They Contain?*

Magic "Index Fossils"

THE thought of key fossils, or index fossils, is intriguing. The idea that one can tell the age of a set of rocks by the kind of fossils they contain is almost breath-taking to think about.

For example, if you show a geologist a fossil trilobite, he will have not the slightest hesitation in rating it as several hundreds of millions of years old. If you show him the bones of certain kinds of reptiles, or certain kinds of shells, or the teeth of a mastodon, he will similarly give the "age" of the rocks where they were found. And it would not make the slightest difference whether the rocks were hard or soft, black shales or white limestones; nor would it matter in the least what kinds of beds were above or below. When good "index fossils" are found, that always settles the matter.

The essential idea about the geological "ages" as based on the fossils is not their immense length in millions of years. Their great length is rather a by-product of their exact *serial order*. This differential dating, or the precise sequence in which they lived and were buried, always thought to be a few at a time, of course necessarily results in the total time's being stretched out to great lengths. But this total length is always considered very indefinite, very elastic. The main idea is the exact order in which they formerly lived and died. As we shall see presently, this is the biological

form of the old mineral onion-coat theory, but the key to each of these biological onion coats is the "index fossils" it contains. The successive "ages" idea originated with the old onion-coat theory; the present one is a hold-over from the former one. But the "ages" theory of our day has no other foundation than this idea of the differential dating of the fossils, and the supposed ability of geologists to date every set of rocks according to the "index fossils" found in it.

Classifying the Fossils

Perhaps a misapprehension needs to be avoided here. The term "biological onion coat" does not mean or imply that the Cambrian forms of life, for example, were once universal over the world. The geologists do not exactly affirm their universality. They say that these fossils existed *exclusively*, and that no other kinds of animals or plants were then in existence, and that after they passed away, the Ordovician appeared, then the Silurian, et cetera, each in turn being the only kind of living things.

It is clear that the facts of *superposition* do prove the relative times of burial (or "age") of the fossils concerned. But this superposition is only for the small, limited locality. Superposition can prove the relative ages of the fossils of the entire world only on the assumption of some sort of biological onion coats. Unless one claims a supernatural knowledge of the long ago, this theory of biological onion coats must depend exclusively upon the alleged fact that the fossils always occur in the same invariable sequence all over the world. This is the reason why geologists always insist so strenuously upon this idea of the invariable sequence of the fossils.

Regarding this last point, the reader will be able to judge better after all the evidence is in hand. Here we need to consider some facts about the popular geological classification system, or the "geological column," so called, after which we must consider these wonderful "index fossils," how they are used, and how they are selected.

CLASSIFICATION

Group	System	Series	Dominant Type of Life
Cenozoic	Quaternary or Post-Tertiary or Pleistocene	Recent Terrace Drift (Glacial)	Man
	Tertiary	Pliocene Miocene Oligocene Eocene Paleocene	Mammals
Mesozoic	Cretaceous	Upper or Cretaceous Proper Lower or Comanchean	Reptiles Conifers and Palms
	Jurassic	Upper (Malm) Middle (Dogger) Lower (Lias)	
	Triassic	Upper (Keuper) Middle (Muschelkalk) Lower (Bunter Sandstein)	
Paleozoic	Permian	Upper Lower	Amphibians and Coal Plants
	Carboniferous	Pennsylvanian Mississippian	
	Devonian	Upper Middle Lower	Fishes and Insects
	Silurian	Upper—Monroan Middle—Salina Lower—Niagara	Invertebrates
	Ordovician	Upper—Cincinnatian Middle—Champlainian Lower—Canadian	
	Cambrian	Saratogan Acadian Waucobian	
Primary or Primitive	Algonkian Archaean		Few Fossils or None

This is the standard geological classification. The various "Series" as here shown are further subdivided into "Stages," and the latter into an endless number of "Formations," which are the objective, local units. All the others are constructive and artificial.

The purely artificial nature of this classification table is shown by the fact that only a very small fraction of this total is ever found together in any spot on earth. Since the total thickness, or the total of the "geological column," is estimated at about 500,000 feet, or 100 miles, and only a small percentage of this thickness is ever found together, the artificial character of this list is plainly evident.

The Hundred-Mile Geological Column

Perhaps we can best achieve our purpose by means of a few questions.

How many *Systems* of the fossil-bearing rocks are generally recognized?

Less than an even dozen from the Cambrian upward on the accompanying table, but nearly a half dozen more if the subdivisions of the Carboniferous and the Cretaceous are considered as of major rank, as is often done, and if the subdivisions of the Tertiary are rated as systems.

The reader will remember that these names are to be read from the bottom upward, which is the order in which they are supposed to have been deposited.

What total thickness of stratified beds are here represented?

The total of all the systems, or the total "geological column," as it is called from the Cambrian to the Pleistocene, is estimated at about 500,000 feet, or about 100 miles.

Is anything approaching this enormous thickness ever found in any one locality?

Of course not. A maximum of about three miles has been found in a few places; but most localities have less than half of even this thickness of water-formed beds above the granite or primitive, while great areas on all the continents are only a few hundred feet in thickness.

An Artificial Arrangement

Then how is this enormous total of a hundred miles obtained?

It is a matter of a little arithmetic. The total is computed in the library or the museum. *It is a constructive or artificial idea, not an objective one.* The maximum for each "type locality" is added to all the thousands of others from scattered regions all over the globe; thus the grand total for the world is easily calculated. But this total is treated seriously by geologists; and the exact chronological relationship of all these subdivisions to one another is

always what is meant when geologists speak of the invariable sequence of the fossils. This relative sequence is treated as something sacred which must be determined with the utmost care and exactness, and must be most carefully preserved in all geological literature. No dedicated communist ever follows the party line more carefully than geologists endeavor to observe the exact chronological dating for every field observation which they make.

The facts stated above are so incredible that one is inclined to ask how it is possible in this enlightened age for such an artificial and subjective system still to hold up its head among the inductive sciences, when all these facts are matters of common knowledge.

The answer is that the spectacular success of mining engineers in locating coal, oil, and other minerals (in finding which they always have to employ objective or common-sense methods), has cast a false halo of apparent sanction around many cosmological speculations which are no proper or essential part of the science, and are mere hold-overs from the former centuries of ignorance and false science. When and if geology ever becomes reformed and placed on a secure basis of objective facts alone, as has already taken place in such sciences as astronomy, physics, and chemistry, these cosmological speculations will be discarded, like alchemy and Ptolemaic astronomy.

Fossils Always the Supreme Test of Age

Every now and then some tyro rises up to deny that the "index fossils" are used as the supreme and infallible test of age. In answer it should be sufficient to present the following from A. W. Grabau's monumental *Principles of Stratigraphy*:

"The primary divisions of the geologic time-scale ["Groups" in the accompanying table] are, as we have seen, based on the changes in life, with the result that fossils alone determine whether a formation belongs to one or the other of these great divisions."—1913 ed., p. 1103.

A similarly positive statement concerning the "systems," or the

next of the great divisions, is made by Henry Shaler Williams, whom James D. Dana nominated to succeed himself at Yale:

"The character of the rocks themselves, their composition, or their mineral content have nothing to do with settling the question as to the particular system to which the new rocks belong. The fossils alone are the means of correlation."—*Geological Biology*, 1895 ed., pp. 37, 38.

With the fossils as the only test of age, and the character of the rocks themselves, their composition, or their mineral content having nothing to do with the matter, we are not surprised to hear Henry Alleyne Nicholson of Scotland tell us that if stratigraphic position seems to be in conflict with the fossil evidence, that is, if the fossils seem to be in reverse order, "it is the former that is to be distrusted rather than the latter," that is, even stratigraphic position has nothing to do with the matter.

Sir Archibald Geikie makes the assurance even more specific in telling us that an entire mountain can be *proved* to be upside down, if we happen to find the fossils in reverse order:

"We may even demonstrate [?] that in some mountainous ground the strata have been turned completely upside down, if we can show that the fossils in what are now the uppermost layers ought properly to lie underneath those in the beds below them."—*Textbook of Geology*, 1903 ed., p. 837.

In view of the wonderful magic of these precious "index fossils," one becomes naturally curious to know how they were selected in the first place. The history of this part of the science is connected with the long period of transition from the old mineral onion-coat theory to the modern biological one; but it is too long a story to give even in outline here at the end of this chapter.

In a previous chapter of this book we have seen how the followers of Werner's mineral onion-coat theory were not particularly religious, and made no attempt to connect their views about the world's origin with any feature of religion. Possibly they realized that this could not be done.

But with their successors it was quite different. Sedgwick and Murchison, Cuvier and Lyell, Hugh Miller and Louis Agassiz, were loud in proclaiming that they were working out the scientific evidences of exactly how God made the world.

In this work of equating geological speculations with the Bible record of creation, Agassiz was the outstanding leader. This brilliant son of a Swiss Protestant minister received, while still in his early twenties, what he considered a direct inspiration from heaven to the effect that the embryonic development of each animal must be the key to the historical sequence in which similar animals were created in the early days of the world. Since every animal starts its development in a small, simply organized or "generalized" form, and becomes more complex and larger with growth and age, Agassiz declared that it must be one of the "laws" of nature that the same order of progression took place in the successive creations of all living things in the long ago.

The way in which this idea captured the attention of the entire scientific world, resulting in the most widespread delusion of modern times, an anti-Genesis system of world philosophy which is deceiving hundreds of millions, will be considered in another chapter.

Fanatical Faith in the Fossils
How the "Index Fossils" Were Selected

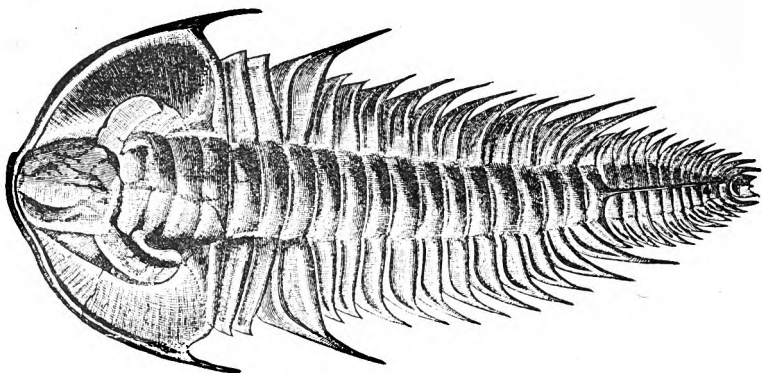
Science or Superstition?

THE most incredibly fantastic features of modern science are connected with the subject of "index fossils." In the preceding chapter we considered how they are used by geologists, and found that in practice they are not only the supreme test of age, but are the one and only test to determine whether a newly found set of beds is to be classed as Cambrian, Carboniferous, or Tertiary. The character of the rocks themselves, their mineral composition, or their degree of consolidation has nothing to do with the matter. Even the stratigraphic position of the beds, whether above or below other beds, whose "ages" are known, can always be explained away, if the "index fossils" call for it.

Fanatical Faith in a Theory

A geologist can be blindfolded and taken a thousand or ten thousand miles in any direction, and if then shown a trilobite, the shell of an ammonite, or any other good "index fossil," he will without the slightest hesitation give the geologic age rating of the set of rocks from which the fossil specimen was derived. And he will do this without ever having seen the rocks themselves.

Naturally enough the reader will be curious to know how these wonderful "index fossils" are selected. That is, How do the geologists decide which trilobites, or brachiopods, or other



A trilobite fossil, which is considered an "index fossil" of the Lower Cambrian layers.

shells are to be regarded as reliable keys to the age of the rocks, so that the presence of a single specimen in a layer will give the geologist confidence to assign this layer to a definite level or "horizon" in the hundred-mile column of the geological "ages"?

Thousands of fossils are considered quite unimportant or "ambiguous," and quite unfit to serve as true "guide fossils," or "key fossils," in these highly technical matters. How were the true "index fossils" first selected, and how are they selected today?

Reviewing the History

Two or three points which have been discussed in preceding chapters of this book need to be reviewed here, before we proceed.

When geology was beginning as a science, it was afflicted for more than half a century by an absurd speculation nicknamed the mineral "onion-coat" theory. The majority of the older rocks, it was said, were formed as chemical precipitates from a universal ocean; hence they were all universal around the globe like the successive coats of an onion. Superposition therefore would be an infallible test of age, and the finding of even isolated specimens of any kind of rock would give us the "age" in which it had been

made. Thus the men of that day became familiar with the idea of "index minerals" as a reliable method of telling the relative ages of the rocks.

Mental habits are not changed abruptly. It is highly important for the reader to remember that the slow substitution of "index fossils" for "index minerals" during the middle nineteenth century was only a change of name, not a change of any fundamental ideas or of methods of reasoning. For nearly one lifetime the two theories existed side by side, and the fossils were merely supplemental to the minerals as a test of age. Geikie, in his history of geology, says that geologists, under the older theory, were "as certain of the origin and sequence of the rocks as if they had been present at the formation of the earth's crust." When they adopted the fossils as the test of age they lost none of their former cocksure dogmatism. The same supernatural knowledge of the past was still retained, for the old idea of complete onion coats had become a part of their fundamental thinking. It is the retention of this idea of biological onion coats, in what Herbert Spencer termed its transcendental form, that makes the modern geologists so desperately tenacious in claiming that their wonderful "index fossils" always occur in the same invariable sequence all around the globe. These tickets of past ages have to be absolutely invariable everywhere, for otherwise their time value is ruined and the entire biological onion-coat theory is spoiled.

What Louis Agassiz Did

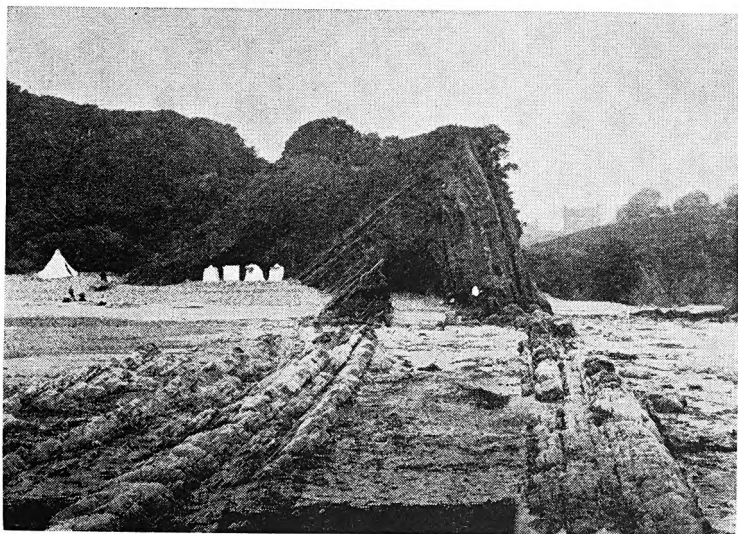
At the psychological moment in the early part of the nineteenth century, when the uncertainties and confusions were rapidly accumulating, in spite of employing both the mineral and the fossil tests, the so-called "law of comparison" was proclaimed by Louis Agassiz. As explained in the preceding chapter, this was that the embryonic development of the individual animal is the key to the historical order in which similar animals were created in the early days of the world. Every animal starts as a small, simply organized or "generalized" creature, becoming more com-

plex and larger with age and growth. Hence it is reasonable, Agassiz said, to suppose that the Creator followed the same plan in creating the smaller and more "generalized" trilobites, shell-fish, vertebrate fishes, et cetera, first, and the larger and more complex kinds of these animals afterward.

This was long before the evolution theory was sprung upon the world. All the men were talking about the many successive creations, on a sort of installment plan, prolonged over a considerable period of time, though not the millions of years which have since become familiar. At that time nobody seemed aware of the unsafe and unscientific method of trying to build up the science of geology by starting with a speculation about how the world was made, instead of starting with the present, taking the world as we find it, and in the spirit of a coroner holding an inquest, attempting to hold speculation to a minimum, and finding out by strict scientific methods what actually did happen in the long ago.

Mistakes About "Extinct Species"

Since strictly scientific methods were at that time out of the question in all geological work, this mystical speculation of Agassiz was rapidly adopted by both the fieldmen and the teachers. Everywhere in Europe and America they soon learned to use the "law" of embryonic comparison to determine which of the many varieties ought to be earliest and which latest, though in applying this "law" the fieldmen found themselves often outvoted by the more highly trained "experts" in the universities and at the geological headquarters. Hence it has become a well-established custom for the fieldworker to box up some of the best specimens he finds, and send them to the museums to be passed upon by the "experts" as the final judges. If there is any serious difficulty still remaining about the age classification of any set of beds, there is always the standing committee on such questions at the Washington office of the Geological Survey, which has been functioning now for nearly a century.



T. C. HALL

Discovery of rock strata pushed up in layers, such as these in Saundersfoot, Pembroke, Wales, gave rise to the "onion-coat" theory of geology.

Another evil idea helped greatly to promote the method of Agassiz concerning "index fossils," for at the time spoken of the scientists all thought that they were dealing with a phantom world, all dead and gone, and that the fossils all belonged to "extinct species." This permitted them to relax the strict rules of evidence and of logic, and made them much more careless in dealing with these "medals of creation" than they ever would have been if they had realized that they were in reality acting as coroners, holding an inquest on a former state of this very world in which we now live.

Agassiz did not stop long with simply comparing the sequence of the ancient successive creations with the embryonic development. He soon was comparing both these series with the modern classification or taxonomic series, and in lectures before enthusi-

astic crowds all over America he was using charts and diagrams to place all three series side by side, and with the utmost enthusiasm showing how they all look alike. "The same laws everywhere," he declared.

A calmer and less emotional comparison of these three series, however, shows us that the embryonic series, from the fertilized ovum to maturity, is the only real or objective series of the three. Also it is the only one of the three which cannot be changed or "monkeyed with" in any way. Everybody knows that the classification series has been changed times without number, and is always a matter of personal opinion. The history of geology shows that the geological series of the fossils has also been changed and readjusted almost as frequently.

The first work of Agassiz was with the fishes of the Amazon and a few other localities, as found in Cuvier's museum in Paris, and then with other collections of fishes in Germany. He arranged the fossil fishes according to the degree of ossification of the skeleton, the character of the scales, and the shape of the tail, placing them in what he was sure was the true chronological order, that is, the order in which they were created.

Others applied the embryonic method to the other kinds of animals. Beecher and others arranged the brachiopods. Hyatt and Sidney Buckman dealt with the ammonites, the latter finally marking off no less than four hundred successive "zones" in the Jurassic system alone, each of these "zones" being distinguished by one or more supposedly infallible tickets of age in the form of "index fossils" among the ammonites. The trilobites and graptolites have been similarly subdivided all over the world, resulting in multiplied thousands of biological onion coats, each supposedly representing a period of time in which that one assemblage of living things existed exclusively, and no distinctly different kinds of plants or animals existed anywhere. Such is the theory of biological onion coats in all its glory.

The rules of Agassiz when applied to the fossil mammals make the cusps of the molar teeth and the number and arrangement of

the toes some of the chief criteria for judging age, and thus for arranging the fossil mammals in a "true" chronological order. The results are shown in the notorious series of fossil "horses," camels, elephants, and other animals, as exhibited in so many museums, where innocent children and uncritical adults gaze upon these purely artificial and subjective arrangements, and think they are reliable, objective science.

We are now in a position to answer the question, How are the "guide fossils" or "index fossils" selected as the true keys to the history of the earth's past? They always have been selected by the experts or specialists in the large museums and geological headquarters. These experts are guided in their decisions by the rules initiated by Agassiz, who believed that the successive creations were similar to the successive stages in the embryonic development of the animals involved. In a few instances the modern popularity of the theory of evolution has brought in some slight modifications, but these instances are unimportant.

Sooner or later, of course, some fieldmen will discover some vertical section in which the particular fossil will be seen in the special stratigraphic "horizon" assigned to this fossil by the men at the museum, thus establishing a "type locality," to which all subsequent investigators can be pointed, as the visible example of the true geological sequence for the particular fossils involved.

When the reputation of a set of "index fossils" has been once established, then the discovery of similar fossils in any new locality will determine the "age" of the strata, no matter what color they are or of what texture or mineral composition, or what other kinds of fossils are found either above or below.

Is this science, or is it a modern form of superstition, based primarily on a prejudice against the teachings of the Bible about the early days of the world?

*Contrasting Declarations Concerning
the Origin of the World and Man*

God and Geology

GEOLOGY is the only one of the natural sciences which is in plain and radical disagreement with God's written revelation. This disagreement is not superficial or unimportant; it is deep and vital.

The Bible gives us a complete and perfect world in the beginning, with no pain or death, and no physical or moral evil. Then after about a millennium and a half this perfect world met with a cosmic disaster, which changed the hitherto perfect climate and completely altered the face of the earth.

Popular geology gives a radically different picture. By first denying that any cosmic disaster has ever taken place, and affirming that "all things continue as they were from the beginning of the creation" (2 Peter 3:4), it projects all the present physical and moral evils back into the past and denies that the world ever was good or perfect.

Thus the two cosmogonies are in radical and complete contrast. Whichever one we accept, the other must be rated as utterly false. They are mutually exclusive. And for an enlightened, logical mind there can be no compromise.

The Christian is not opposed to true science. He has a firm faith that God is the Creator and the Author of all truth, whether revealed through nature as His oldest testament or through His written word. Each may be liable to misunderstanding or misin-



GALLOWAY

A student at the University of Wyoming assembles the bones of a prehistoric animal discovered on a summer field trip by the geology department.

terpretation; but he holds that of the two the Bible is more plain, and far less likely to be misinterpreted; and when the two appear to be in conflict, he must take the Bible every time, as the Reformers accepted the Bible as against the established church and the councils.

Accordingly the enlightened modern Christian says that there must be something wrong with this sort of geology. He appeals from Philip drunk to Philip sober. But what or where is the remedy?

The late A. N. Whitehead has given some sound advice:

"When you are criticizing the philosophy of an epoch, do not chiefly direct your attention to those intellectual positions which its exponents feel it necessary explicitly to defend. There will be

some fundamental assumptions which adherents of all the variant systems within the epoch unconsciously presuppose. Such assumptions appear so obvious that people do not know what they are assuming, because no other way of putting things has ever occurred to them."—*Science and the Modern World*, page 71.

It is in accord with this advice that the enlightened modern Christian is not content to point out a few minor mistakes or inconsistencies here and there in the popular geology. His researches must take him back to the basis of all geological reasoning, and to a searching criticism of its early history. The early history of how the founders of the science thought about their problems will be likely to show us why the results of the science in our day come out so completely contrary to the plain records of the Bible.

Science Must Discard Speculation

The experience of hundreds of years has taught us that no science can be secure or reliable unless it has completely discarded all speculative assumptions and is built up from the bottom on objective facts alone. Astronomy, physics, and chemistry are examples of inductive science, winnowed of all mystical assumptions and built up on verified facts.

Since geology is partly historical, and thus undertakes to find out what happened in the past, the only safe or reasonable course is to be careful to approach its task in the spirit and by the methods of a coroner holding an inquest. Local examinations here and there are all right and proper for the accumulation of data, but the final inquest must be upon the world as a whole. It is wholly unscientific, and sure to result in blunders for geologists, to start out with mystical assumptions about how the world was made, as Cuvier and Agassiz so unblushingly did a century ago, assumptions which we now know were entirely false. This is amply sufficient to explain all the sorry mess in which we find the science today.

What is called the modern science of geology is in a most

astonishing condition, being a mixture of fact and nonsense both in its methods and in its conclusions. In any minute study of a particular set of rocks in a specific locality, geologists generally follow facts and common sense, and their results are accordingly reliable. But in every general view of the world as a whole, or in the time correlation of the rocks of one region with those of another, they always follow their inherited mystical assumptions and out-of-date theories. Wherever modern geology agrees with facts and common sense, it contradicts these assumptions and theories, while whenever it follows these theories it contradicts plain objective facts and common sense.

The remedy, of course, is to return to sound methods of pure inductive science, which discards all mystical assumption and builds up a solid science of objective facts. A science of geology along these lines and employing only inductive, nonspeculative methods would be secure in its results, and we may be sure beforehand that such results will not contradict any other truth.

The Five Young Geologists

What I mean can be made plain by an illustration. Let us suppose that the man nicknamed "Strata" Smith, the so-called "father" of British geology, and Georges Cuvier had been born on the prairies near the boundary between Canada and the United States, just east of the Rockies. Yes; and let us also include with them Adam Sedgwick, Roderick Murchison, and Charles Lyell. As they grew to manhood they would become acquainted with the surrounding country, examining the rocks as well as the plants and animals. Let us also suppose that in some manner these eager students of everything in nature have become familiar with the animals and plants of other lands, including those of the deep oceans, so they may come to their studies of these rocks in their own locality without those preconceived prejudices about "extinct" species and successive catastrophes which we know so seriously warped their investigations in real life. That is, they are well informed and equipped, and they can approach their geological

studies in the spirit of a candid, unprejudiced coroner about to hold an inquest.

In due time these keen-eyed observers become familiar with the entire Alberta-Montana region of the Rockies, that most hush-hush of geological puzzles where the entire front ranges of the mountains look like monstrous Paleozoic islands floating on a vast Cretaceous sea. Not being handicapped in the least by mystical or theoretical prejudices, they are not misled by the small local disturbances here and there, so they have no hesitation in looking upon the stratigraphic succession here as a normal one, the Cretaceous having been deposited first, and the Paleozoic upon it usually in complete conformity.

Obviously some of the early geological theories would never be entertained by these five young student geologists for one moment. I do not think that any of them would think of these deposits as representing successive creations and catastrophes; and I am confident that they would never look upon this stratigraphic order as of world significance, or that it represents the sequence in which the Cretaceous shells and reptiles and the Paleozoic trilobites and brachiopods will be found occurring over the rest of the globe.

Why Not Begin in Montana and Alberta?

Why would not this Alberta-Montana region be as good a place to start the science of geology as Wales or the Paris basin? In places these Cretaceous beds are as much on the *bottom*, or sitting directly on the old crystallines or granite. They cover an enormous area, and one has to travel great distances in almost every direction to find any different fossiliferous beds below them. We know that around the border of all such large formations the phenomena of interfingering always make it possible to interpret the "correlations" in any way one's theories desire. So why would not this locality be a safe place in which these five young gentlemen should start their geological education?

One conclusion seems self-evident. If these highly intelligent

young men came to the study of this locality without theoretical prejudices of any kind, it would not take them long to decide that the fossils here represent only local floras and faunas, buried at some time or times in the past; but that we do not have here enough data to settle the larger problems of the how or the when. If they were able to restrain their natural human tendency to frame a snap judgment, they might decide that only after the rocks of the entire globe have been carefully examined, or after the evidence from the rest of the globe is all in hand, can we render a safe and sure verdict concerning what must have happened in the long ago to bury these creatures where we now find them.

In the concluding chapter we hope to present such a verdict.

Will Geologists Become Scientific?

THE word "geology" is from the Greek, and means "the science of the earth." In more than one place in the preceding chapters I have stated that the only proper method of studying this science is in the spirit of a coroner who is holding an inquest.

The hasty snap judgments of the three blind men who undertook to describe the elephant from the small patch of surface which each had touched, was no more unscientific or absurd than the cocksure methods of the early geologists in theorizing about the entire world from the little patches of Western Europe which they had seen. In the words of Whewell, they "promulgated, as respecting the world, a scheme collected from a province, and even too hastily gathered from that narrow field."

Sir Charles Lyell was the first geologist who ever wandered far from his own dooryard. But he never got west of the Mississippi; hence he never saw the wonderful geology of the Western United States, so full of facts contrary to his ideas. He knew absolutely nothing about the conditions prevailing all over the bottoms of the oceans, where the brachiopods, crinoids, and other animals comprising the *benthos* live completely undisturbed by any currents, so that they are never buried in any true stratified deposits; for he died the same year as the beginning of the "Challenger" Expedition, the first of many studies of life and conditions in the deep waters.

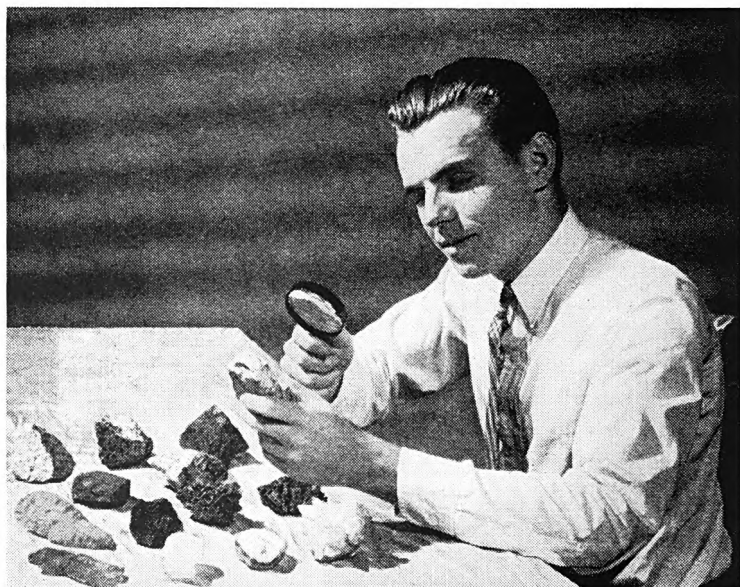
Lyell and all the other founders of the science were dead long before it was discovered by careful surveying that the coasts of the continents are not perpetually seesawing up and down, but have remained essentially stable since the first reliable scientific observations, thus leaving completely unexplained how the ancient exchanges of land and ocean could have taken place.

It is plain that the early geologists never dreamed of the method of holding an inquest on the world as a whole, and were not equipped either by scientific knowledge of the rest of the world or by temperament to do a good job at such a work, even if they had thought of the plan. They were purely speculators, playing at tracing out how the world had been created in successive stages, or on the installment plan, a few animals and plants at a time. It was the *creation* of the world, not its ruins, which they claimed they were examining. They never dreamed of trying to employ strictly scientific methods to try to find out what had really happened to the world in the long ago, as recorded in the rocks.

The Methods of a Coroner

Lyell was the first geologist to concern himself about scientific methods. He set the example of strictly objective methods in observing and describing *local* conditions, and then by blind faith in the prevailing cosmogonies pigeonholing these local formations in the places demanded by the theories about the differential dating of the fossils. His slogan, "The present is the measure of the past, and of all the past," was rapidly accepted over all the world. In actual practice he and his followers made this formula mean a dogmatic denial that anything like a cosmic disaster had ever overtaken the world. It was as if a coroner should deny the possibility of a suicide or a murder, and should openly proclaim that he was limiting his investigations to the various natural causes of death, in spite of the presence of a half-dozen bullet holes in the body he was examining.

Lyell was further precluded from ever conducting an honest inquest on the rocks of the entire globe by accepting without



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Geologists and mineralogists find many excellent specimens to assist them in their special studies.

question the serial order of the fossils, giving each its differential time value. The transition from index minerals to index fossils took place during the early decades of his long career, and he as much as any man helped to bring about the change. He became the chief exponent of the new theory of index fossils, even adding his own supposed improvement in the form of dividing off the parts of the Tertiary system in the accustomed chronological style by the percentages of "extinct" and "living" shells found in them.

By flatly denying that the fossils and rocks represent the ruins of a world, and then arranging these rocks and fossils in an artificial chronology, Lyell was able to make it appear that he and his fellow geologists were dealing with the creation of the world, instead of its disaster. This counterfeit, or real burlesque, of God's

original creation has proved to be one of the worst and most deceptive falsehoods ever palmed off on poor humanity by Satan, the father of lies.

Will the Situation Improve?

Is there any likelihood that geologists will discard mystical speculation and adopt strictly scientific methods, like an unprejudiced coroner holding an inquest?

Not immediately, and probably not tomorrow. The Good Book declares that men love darkness rather than light. In the cold language of science, this means that man is seldom a rational creature. Few of the species called *Homo sapiens* have ever followed good sound reasoning concerning such problems as cosmogony, or our duty to our Creator. The future will not grow better; for "evil men and seducers shall wax worse and worse, deceiving, and being deceived." 2 Timothy 3:13. Fallen man is not a rational being; he is under the hypnotic domination of emotions and prejudices. Instead of his controlling them, they control him, and make him play such fantastic tricks of bad logic and childish reasonings before high heaven as must make the angels weep.

No; I have no illusions about the probability that the geological situation will get better. In several places the prophecies of the Bible refer to the great last-day apostasy, which, as we have already shown, has been brought about largely because of discarding the Bible doctrine of creation for the reckless guessing of false science; and in none of these prophecies is any mention made of an ultimate improvement in the general world situation. Indeed, the divine message of Revelation 14:7 is a call for every human being to worship the Creator because the hour of God's judgment is come, a call that is timely now because of the almost universal abandonment of the belief in a real creation.

Modern Geology Foretold

A vivid word picture of the geology of our day is in the second epistle of Peter. Led by the Holy Spirit, he predicted that in the



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The American Museum of Natural History reconstructs a group of northern mammoths that may have lived in the days before the Flood.

last days mocking unbelievers would arise, who would ask in derision, Where is there any sign of a catastrophic end of the world? They will give as the proof of their incredulity their claim, "Since the fathers fell asleep, all things continue as they were from the beginning of the creation." 2 Peter 3:3, 4.

This plainly refers to the modern uniformitarian creed of Lyell and other geologists. It implies that in the days of the fathers they used to believe in a catastrophic end of the world; but now people know better, the reason being that nothing of the sort has ever happened to this planet in the past, but all things continue as they have ever been. The reader will remember that Sir Charles Lyell's creed was that the present is the measure of the past and the

measure of all the past. In other words, he gave a dogmatic denial that such an event as Noah's Flood ever took place; and on the strength of this denial he and Darwin and all the others scoff at the idea of a literal second advent of Christ and a catastrophic end of the present order of things. For "all things continue as they were from the beginning of the creation."

The last six words seems to imply that they extend their creed of uniformity back, not to the close of creation, but to its beginning. Thus creation itself would be smoothed out and made only a part of the regular or ordinary "laws of nature," which is exactly what is taught by the theory of organic evolution, which, as we know, has grown out of the prevailing theories of geology.

Whether or not we accept this interpretation of the phrase "from the beginning of the creation," nobody can deny that the entire passage is a wonderfully accurate description of the philosophic and scientific attitude of the modern world. Its denial of any impending end of the world is openly based on the creed of geology, that no world disaster has ever taken place in the past.

How does the apostle answer these skeptical modern scientists?

Appropriately he quotes the record of the Flood. He charges men with being willingly ignorant of this event, or of "willfully forgetting" it, as one translation phrases it. "The world that then was," he says, "being overflowed with water, perished."

He then goes on to warn these last-day unbelievers that God is going to do an even more complete job next time; for the next destruction of the world will be by fire, which is a much more effective agent of purification than is water. "Nevertheless we, according to His promise, look for new heavens and a new earth, wherein dwelleth righteousness." Verse 13.

Peter was no pessimist. He foresaw the great modern apostasy, and he saw the necessity of purifying the earth by fire. He looked beyond them and let his hopes dwell on new heavens and a new earth, wherein the righteous shall dwell "according to His promise."





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